

MARINE RECORD

ESTABLISHED 1878.

VOL. XXII, No. 35.

CLEVELAND---AUGUST 31, 1899---CHICAGO.

\$2.00 Per Year. 5c. Single Copy.

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

PRESIDENT.	
FRANK J. FIRTH,	Philadelphia.
1ST VICE-PRESIDENT.	
CAPT. THOS. WILSON,	Cleveland.
SECRETARY.	
CHARLES H. KEEP,	Buffalo.
TREASURER.	
GEORGE P. MCKAY,	Cleveland.
COUNSEL.	
HARVEY D. GOULDER,	Cleveland.
EXECUTIVE AND FINANCE COMMITTEE.	
JAMES CORRIGAN, Chairman,	Cleveland.
COMMITTEE ON LEGISLATION.	
GIBSON L. DOUGLAS, Chairman,	Buffalo.
COMMITTEE ON AIDS TO NAVIGATION	
GEORGE P. MCKAY, Chairman,	Cleveland.

AN INTERNATIONAL COMMISSION ON LAKE LEVELS IMPERATIVE—VIEWS OF A PROMINENT OFFICIAL OF THE DOMINION OF CANADA—PREVENTION BETTER THAN CURE.

TORONTO, ONTARIO, Aug. 29, 1899.

THE MARINE RECORD, CLEVELAND, O.

I have read with more than ordinary interest, a copy of the very able article contributed by Frank J. Firth, Esq., President of the Lake Carriers' Association, on "maintaining lake levels" and which you kindly forwarded to me requesting my opinion upon the scheme he suggests.

I have, as Engineer in Charge of the Lake District, for the Public Works of Canada, been nearly twenty years associated with the works of construction and improvements of the harbors in this district and have viewed with much anxiety every project which tends to reduce the levels of the lakes. I refer to the construction of the Chicago drainage canal and the deflection of water for power service at Sault Ste. Marie and the power canals at other points, without any remedial works to offset their draught upon the waters.

It is quite enough to figure and supply remedies for the lowering of the waters from natural causes; these natural causes being the cutting down of the forests on either side of the lakes and the consequent quicker precipitation of the snow and ice in the spring, as well as the flood time lasting so much less every year as the forest is removed; added to this is the cultivation of the land causing greater evaporation and absorption. These conditions alone have had a marked effect in the years I have been engaged in my duties in this district, and it is certain the same conditions will go on until the maximum of forest felling and cultivation of the soil is reached. These conditions, of themselves, are very serious and demand careful consideration and investigation just to know how far they will extend in reducing the levels and also what can be done to give remedial dams and feeders.

An International Commission, as outlined by Mr. Firth, is imperative and cannot be formed too soon. Both the United States and Canada vote and expend vast sums of money every year in dredging and blasting out channels and harbors to obtain and, for a time, maintain, a sufficient depth of water for the class and size of vessels now used for the commerce of the lakes. As I said before, it becomes a serious question how long this state of affairs will last and how long engineering skill and money can make the channel approaches and harbors capable of serving the lake craft.

It does seem strange that no attempt has been made, so

far, to remedy even the natural lowering of the lakes. Would not one ounce of prevention be better than a pound of cure in this case?

Data is required, and to obtain it, money must be expended. To my mind the first important information is the actual area of the several watersheds and how these watersheds feed the lakes, then no doubt, the "stop logs" can be arranged for.

I trust some valuable results will follow from the way you are placing this important matter before the public and I shall be pleased to add my little quota at any time to forward the end desired,

Yours very truly,
MAJOR HENRY A. GRAY,
M. Inst. C. E., M. Can. Soc. C. E.

Engineer in charge of District Western Ontario Public Works of Canada.

DIMINISHED FLOW THROUGH THE ST. CLAIR RIVER—CHANGE IN LAKE LEVELS—CURRENT AND DEPTH AFFECTED.

CAPT. MCDUGALL'S PLAIN STATEMENT.

DULUTH, MINN., Aug. 26, 1899.

THE MARINE RECORD:

Just returned to my office and find yours of the 18th. I fear I am too late to make any reply of proper value to your paper, on the effect of lake levels by flow of the Chicago drainage canal. The drainage basin of the Great Lakes is like any enclosed pond with a supply and an outlet. If you increase the outlet and not change the supply, the result is so plain, I wonder whence the question. As I understand it, ultimately 300,000 gallons per minute will be drawn through the canal, this would reduce the volume through St. Clair river, both by current and depth, possibly depth might not suffer in proportion to current, but doubtless some small change in harbor and lake levels will follow.

At present, the highest stage I have ever known is in Lake Superior, and should we have dry seasons follow this exceptionally wet year or two, it will furnish grounds for complaint should they open the canal soon.

Yours truly,
ALEX. MCDUGALL.

AN INTERNATIONAL COMMISSION ENDORSED—OFFSET LOWERING OF LAKE LEVELS BY ARTIFICIAL MEANS.

GILBERTSVILLE, OSWEGO CO., N. Y. Aug. 25, 1899.

THE MARINE RECORD:

Your letter of 22nd forwarded to me up country. Senator Brice in 1896 entered into correspondence on the subject of lake levels, and the report he made as chairman of Senate committee covered results. I believe the best opinion is the variation, except those which are local and spasmodic, though not entirely understood, are in the main due to factors of rainfall in certain central basins and meteorological conditions. The water was very low in 1896, but not lower, perhaps, than it has been heretofore. The construction of artificial channels may, and necessarily makes changes, but these channels can only be of such capacity—i. e. will be built even when of the more increased dimensions hoped for—as to have only a slight effect compared with the natural ebb and flow, and whatever that diversion or lowering of level it may be, and should be offset and overcome by artificial controlling structures at Niagara, and at foot of Lake Superior and later at head of St. Lawrence. By reason of slope in discharge of rivers—the St. Clair—raising Lake Erie will in a measure raise levels of St. Clair and Huron. Moreover, it is well thought that such structures will do more,

will, in fact, raise the average level—normal—some three (3) feet in Erie and two (2) feet in Superior, further than which we can not go without land damages for overflow, and further, that so soon as the exact outflow of waters at these points are determined and data as to foundations, they may be built and are feasible, and that too, at a cost that will nearly be as one to five (1:5) for same increase in depth in harbors and connecting channels by previous methods of excavation.

If these be facts and should be determined by exhaustive study and survey, we can not too soon set about them. The commerce of these waters is the largest known and most progressive in volume; the artificial channels built, building and contemplated—especially the deep waterway to tide-water Hudson, opening up the whole lake region to first-class navigation and making a trunk route between ocean and interior, only emphasize that all these matters and the bettering and cheapening of this immense medium of transportation—the inland waters and their uses, as well for manufacture, should have the immediate attention and thoughtful consideration of the two peoples—for this subject of lake levels must necessarily be international, and in that regard, where benefit is mutual, invited effort on the part of Canada and the United States should not be halting or difficult. The deep waterway Board of Survey were to consider this topic, and their conclusion may be authoritative and final, if not, steps should be taken to have somebody appointed to make the determination—which should be easy of accomplishment considering the immense interests and territory to be advantaged.

Yours very truly,
JOHN A. C. WRIGHT.

VALUE OF NAVAL PRACTICE.

Doubling the allowance for firing practice in the British navy is significant. The publication of official returns showing only thirty hits out of every one hundred shots by the best British gunners at target practice doubtless hurried on the change, though the excellence of American gunnery in the recent war prepared the way for it. Possibly the maneuvers now going on in British waters may give us in return some light on the relative importance of torpedo-boats and torpedo-boat destroyers, a point which the war with Spain did nothing to settle. The problem of the maneuvers is to determine whether the destroyers are able to prevent torpedo-boats from interfering with sea-going battleships.

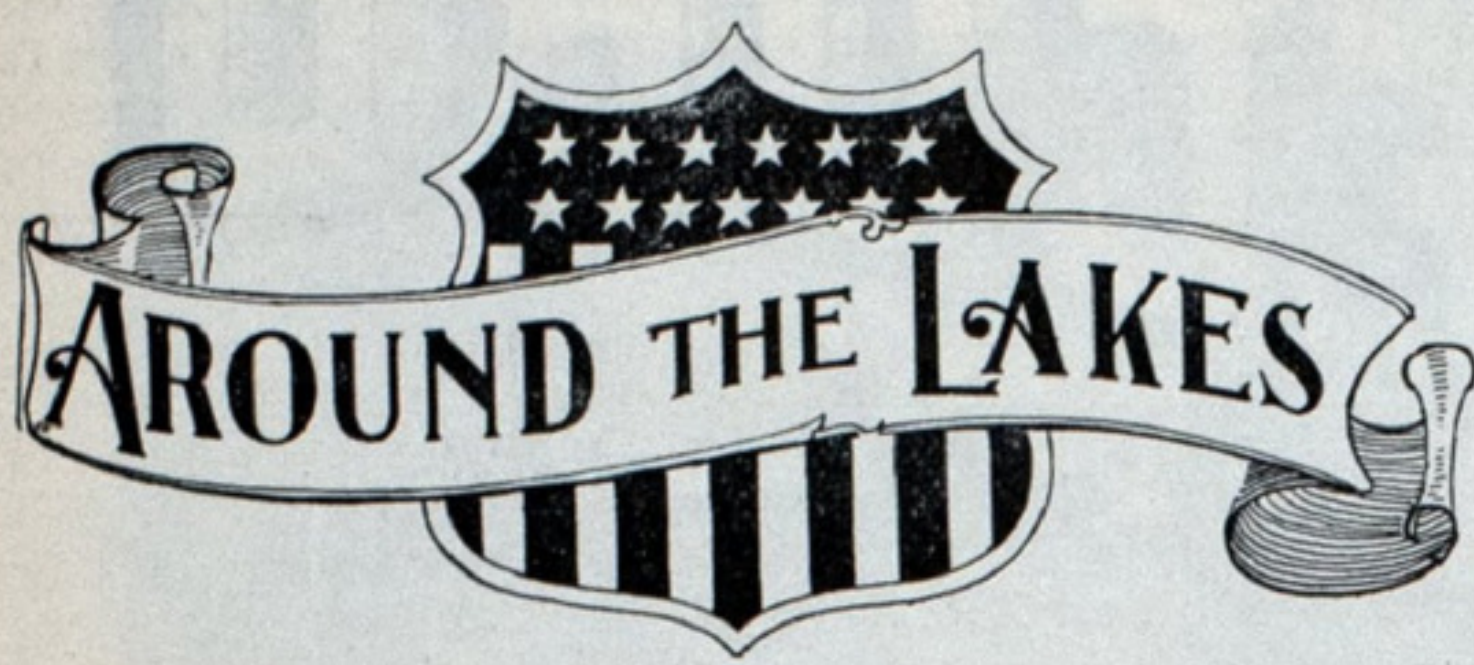
A BIG DEPOSIT OF ORE.

Mr. Reid, a wealthy contractor, and owner of the Newfoundland Railway system and Sir William Van Horne; H. M. Whitney; President Shaughnessy, of the Canadian Pacific Railway, and Senators Fox and McKeen, of the Canadian Parliament—all of whom are directors of the Dominion Iron and Steel Company, inspected this week the hematite deposit on Bell Island, near St. Johns, N. F., from which material will be taken to supply the proposed smelting works at Cape Breton.

The company will mine 4,000 tons of ore daily. There are 26,000 tons in sight, besides submarine areas, said to be equally valuable.

RECEIPTS FROM TONNAGE TAXES.

The receipts from tonnage taxes in the United States during the fiscal year ending June 30 last, were \$834,087, compared with \$846,771 for the previous year. Steamships paid \$670,944, sail vessels \$160,615, and the penal taxes amounted to \$2,528. British vessels paid \$528,353, German \$92,938, American \$65,815, Norwegian \$48,019, a decrease of \$24,000 in the case of British vessels and an increase of others. Japan paid \$3,309, compared with \$2,342 the previous year.



DULUTH-SUPERIOR.

Special Correspondence to the Marine Record:

Capt. Singer, late manager of the tug line, will probably go into the excursion business with a small steamer.

The Anchor line steamers have always been favorite passenger boats, and this season they have been patronized better than ever.

Vessels are now carrying ore at about 300 per cent. off for cash, that is, season charters are so much less than the going rates of freight.

The wheat rush is now beginning and some lively receipts and shipments will be done from this on. The crop will about equal last year's.

A little squabble among the tug crews is on this week, the firemen want two men to each boat, there has only been one man carried in the smaller boats heretofore.

The Great Northern line offered the owners of the steel steamer W. H. Gratwick \$30,000 net, lump sum charter for the balance of the season. The offer was not accepted by her managing owner, Capt. John Mitchell, Cleveland.

The small steamer Thomas Friant has been bought by Houghton parties this week for \$3,500. She will be placed on the route between that port and Dollar Bay. Her late owner, Capt. R. Vanderhoef, Chicago, has held her for sale for five years.

The local inspectors of steamboats were compelled to lay up the Port Wing slab-carrying steamer Lady Loucks. A dry goods box bolted together, with a locomotive boiler driving a stern wheel is hardly a steamer in the eyes of the law or of the local inspectors.

More appliances, scows, etc., are being sent to the stranded Harlem this week. The scows are to act as bilge logs in keeping the wreck upright while being towed here. It took nine steam pumps to keep the leaks down but she had such a bad list that they beached her again for this extra assistance, which, by this time, is about alongside of her.

There are no less than sixteen dredges at work in this harbor. The six dredges engaged on private work are distributed as follows: Allouez bay, Omaha dock, 1; Great Northern ore dock, 1; Northern Pacific dock, Superior Bay, 3. Belt Line elevator dock, 1. The three dredges at work for the Northern Pacific are those of the Duluth Dredge & Dock Company.

The railroads now figure on carrying lumber from the head of the lakes to Chicago at a rate of \$2.50 per M. feet on white and \$3.00 for Norway pine. The lake rate is \$3.25 per M. feet, including handling charges and it is this differential, as well as prompt delivery, that makes the vessel rate cheapest. It is likely, though, that the railroads will capture some of the smaller consignments, as lumber carriers have all that they want to do.

There has never been a year when the coal men at the head of the lakes required as much coal as they do this year. The docks were swept clean last spring and there was none carried-over stocks to relieve the situation. A year ago last spring there was probably 200,000 tons of coal on the docks at the head of the lakes. The soft coal receipts are 300,000 tons shy of this date a year ago, but the hard coal receipts are a little ahead of those for last year at this time. A coal agent here states that he expects to see the coal rate climb to a dollar by Oct. 1. This figure will mean at least \$2 ore.

The steamer Penobscot, now at the yards of the Superior Ship Building Co., received more damage from her recent stranding than was anticipated. It was quite a job to float her again, and it will be no small job to repair her. She is a steel boat of 2,684 net tons, built at Bay City in 1895 and valued at about \$200,000. Surveyors say that 72 plates must come off her bottom and cost of repairs is placed at about \$25,000, added to which is the rather heavy wrecking and towing expenses as well as detention during the most valuable part of the season. However, her owners, Eddy Bros., have always been very fortunate with their floating property and they are also a very wealthy firm, so the casualty is not so bad as if she was a poor man's ship. It is said that she stranded owing to compass variation(?), local attraction, or something or another. Underwriters know that it was her screw that put her there.

It looks a little as if our weather bureau down in Porto Rico ran up against too difficult a proposition when that hurricane appeared in the offing. Or may be it didn't have a hurricane flag to hang out.—Cleveland Plain Dealer.

Ship-Terms (stout party) (to bathing master)—Got a bathing suit to fit me? Bath Robe Man (looking him over)—I guess so. What's your displacement?—Philadelphia North American.

CHICAGO.

Special Correspondence to The Marine Record.

Capt. J. S. Dunham, also J.G. Keith, visited Cleveland this week.

Capt. Harry Harbottle has been appointed master of the C. W. Moore.

The grain rates advanced to 3 cents on corn to Buffalo, and 2½ cents to Port Huron.

The sum of \$4,750 is the charter price for a large steamer on one trip, Duluth to Buffalo.

The steamer Imperial is for sale. H. L. Marshall, 173 So. Water street has the disposal of her.

Rivalry between the tugs Charnleigh and Evans in catching a tow resulted in the first-named tug having her stem badly twisted.

The Rittenhouse & Embree Lumber Co., of this city, have purchased from J. C. Gilchrist the steamer Oregon and consort S. H. Foster for \$50,000.

The South Chicago shipyard is receiving material from Pittsburg in fairly good shipments, so that construction work will be carried on continuously.

Steamer John Otis, Capt Sanford, reports the careless handling of a passing steamer on Lake Michigan during a fog whereby a collision was narrowly averted.

Capt. M. E. Barry secured the schooner Robert Howlett at auction sale for \$140 and assumed her debts of \$1,200. She will be put in the trade as an ice barge between this port and Escanaba.

It is now said that the several steamers of the Ogdensburg Transit Co. will make a mint of money next season in the Chicago-Montreal trade, as they are all handy boats for through shipments to the Atlantic carrier.

Capt. J. A. Connelly will command the steamer R. A. Packer; Louis St. Clair will take charge of the Temple Emery and William LeRoy will succeed Hans Hansen as master of the schooner E. M. Thompson.

The Menominee lumber rate is expected to go up to \$2 per M feet next week. There are no takers for Duluth at \$3. Port Wing, Lake Superior, paid \$3.50 on a cargo this week and \$3.25 is now considered the going rate.

The Goodrich line will make large improvements on their passenger boats this winter. About \$15,000 is to be put on the whaleback steamer Christopher Columbus, and the city of Racine will also be given some important alterations. The company are keeping all of their boats up in first-class shape.

Charles A. Thompson, well known in marine circles, is dead at Racine, aged 65 years. He became identified with the Goodrich Transportation Co. in 1865, as purser, and remained with that firm until 1896. In 1886 he was made agent of the company in Racine, where he served until he retired.

When Mr. T. T. Morford assumed control of the western business of the Union Steamboat line after 30 years service with the company, his position was left vacant, his former assistant, Mr. H. B. Ford, has now been promoted to that office, and W. B. Wetherell succeeds Charles M. Cottrill at Milwaukee.

Capt. J. G. Keith, a shrewd vesselowner and broker, expects an easy \$2-rate on ore, and wheat from Lake Superior to pay up to 6 cents or even 7 cents per bushel before the season closes. Others, with whom I have spoken, say that vessels will be in demand at a fair living rate of freight all of next season also.

The shipyards at South Chicago are to receive such improvements as will permit the construction of four of the largest class of vessels at one time. Traveling cranes, conveying machines and other new machinery will be placed at once. Three keels are already laid and facilities will be given to lay a fourth.

The officers of the syndicate now known as the Great Lakes Towing Co., were here on Tuesday, and fixed up matters with the Barry Bros., (Independent) tug line. The title is now vested in the name of C. W. Elphicke, trustee. No change has been made in the management of the fleet. Capt. J. S. Dunham would not discuss the matter, but some negotiations were also carried on regarding his fleet of tugs.

The steamer German chartered by the Canada-Atlantic line, released from the rocks near Detour by the wrecking outfit and tug Favorite, Capt. Mart Swain, is now in dry dock, with heavy bottom damage, some twenty plates and a number of frames will be renewed, re-rolled and straightened. The present damage estimate amounts to about \$10,000 besides the detention of about ten days during what may be considered as the most valuable part of the season.

Capt. Miles Barry is still after a fleet of wooden steamers, the H. E. Packer and Fred Mercur of the Lehigh Valley Line have been well kept up and although built in 1882 are still on the first letter. An offer of \$65,000 has been made for the two boats. The boats aggregate 2,000 tons, net, and carried an insurance valuation of \$100,000. Capt. Barry thus figures on paying about \$33 per ton for these handy well found steamers. I should say that the chances are all against the boats being sold for such a price in view of the present rates of freight.

CLEVELAND.

Special Correspondence to The Marine Record.

The Put-in-Bay route will be kept open until September 15.

Capt. Willis Chilson, barge Manda, has been given charge of the steamer Manila.

The members of the life-saving service on the lakes are petitioning for an increase of pay. This relates solely to the surfmen.

A little detention is now being experienced at ore receiving ports owing to the rush of boats; everything possible is being done to facilitate discharging.

Mr. Stockman, formerly forecast official of the local Weather Bureau office, has returned to duty at Havana after spending an enjoyable vacation here.

The Mutual line steamer Coralia commenced discharging 5,583 tons of iron ore a little before 6 a. m. last Monday, at Ashtabula, by 7:30 p. m. she had a clean swept hold.

Capt. J. S. Dunham was here on Thursday, probably to close with the towing combination for his fleet of tugs. The captain has probably thought twice over the situation.

The D. & C. line announce that after Saturday, September 5, the regular day trips to Detroit will be discontinued. A larger number of passengers have been carried this season than ever before.

Capt. James Davidson was here on Friday and Saturday, closing the sale of the wooden steamer Appomattox and consort Santiago, disposed of through the agency of Capt. W. C. Richardson.

Now there is talk of importing foreign steel plates to help along new construction at the shipyards. A dozen firms are waiting to have keels laid, but the metal can't be obtained to put the hulls together.

Mr. Quincy Miller, of the firm of Miller & Johnson, boiler makers and sheet iron workers, recently entered into a life charter with a consort. All hands wish Quincy prosperous times and fair winds on the sea matrimonial.

The Northern Transit Co., Farasey & Marron, general agents, is having a large patronage on its lake Ontario route. Passenger state rooms for the next few weeks should be booked well ahead, to insure the best locations.

Messrs. Corrigan, McKinney & Co. took over from J. C. Gilchrist the steamer Minnesota and her consort Halloran this week. This makes a fleet of ten wooden boats purchased by Capt. James Corrigan within the last few weeks.

The C. & B. line are now giving excursions to Toronto and return at a rate of \$5. A large number of tourists are availing themselves of the low fares. On Monday, September 4, a popular excursion will be given in the afternoon for labor day celebrants.

Capt. George A. Simpson, compass adjuster, spent three days here this week, and returned to Sault Ste. Marie, where he has made his home for several seasons past. Capt. Simpson visited Puget Sound last winter and adjusted compasses there for Klondike expeditions.

Mr. T. F. Newman, general manager of the C. & B. Line made a humanitarian record this week in sending the castaway crew of the burned steamer Tilley to their homes in Canada at a nominal figure. Mr. Newman has a knack of doing the right thing at the right time and this is one of his latest gracious acts.

The propeller Sir S. L. Tilley, which was burned off Fairport on Saturday night, was built for Sylvester Neelon of St. Catharines in 1884, and was a composite built craft of 750 tons net register. She cost about \$100,000 to build. R. O. & A. B. Mackey bought her in 1896. She was valued at \$46,000 at the Inland Lloyds, and was insured for \$35,000.

The steamer Appomattox and the schooner Santiago were sold this week by James Davidson to the Boston Coal Dock and Wharf Company, of which M. Monseratt, of Columbus is president. The price paid was \$230,000. The boats were turned over to Pickands, Mather & Co., managers for the new owners. Corrigan, McKinney & Co. added the Progress to their fleet of small wooden craft.

Within half an hour after the launch of the steel cargo steamer Malietoa, built at the Lorain yards of the American Ship Building Co., to the order of the Minnesota Steamship Co., she was placed alongside of the large sheer-legs ready to receive her machinery. This is the expeditious style of work that places lake shipyards in the front rank of the world's shipbuilding industry.

Capt. Collier, as general manager of the Great Lakes Towing Co., while acting in a conservative manner at all lake ports, is getting the system in smooth working order, with as few changes as seems to be possible. Each season will suggest improvements, transfers of tugs, also local managers, etc., but there is no disposition evinced to ride rough shod anywhere, or to change the usual customs at each port.

This has been a week when every berth was taken up in the steamers between here and Detroit, and deck passages only were available. In such an instance, a second boat would be always in order and she should be within reaching distance, to place on the route within a few hours' notice. Lake passenger traffic is rapidly increasing and will do so each year, so that a more adequate service will be called for in the future.

Capt. McKay, formerly with the D. & C. line, visited this port during the week and spent a couple of enjoyable days visiting his old friends and acquaintances. It is quite within the truth to say that the captain looks better than he did ten years ago, and it is several years since he "swallowed the anchor." Some men have the means and know when to quit working, of such is Capt. McKay, the "big captain."

Mr. Allen, for several years in the local Weather Bureau office, and who is kindly remembered by a large circle of acquaintances for his obliging disposition and always courteous manner, visited this port on Saturday. Mr. Allen has received merited promotion in the service, as his excellent work here so well entitled him to, he is now director of the climate and crop service of New York State, stationed at Cornell University, Ithaca.

An official of the Northern Steamship Co. says that there is nothing in the story that the line would build two more steamers like the North West and North Land. Anyone he says that has access to the columns of a paper can think up any scheme or project and give it a certain circulation and such he stamps the last yarn. Mr. J. J. Hill, president of the Great Northern R'y is expected to visit Cleveland this week but not for the purpose of making a contract to build two more twin-screw exclusively passenger steamers, more likely perhaps, to look into the coal situation and learn why the west and north-west are being so neglected as the shipments indicate. Mr. Hill is deeply interested in the welfare of the north-west and progress must not be retarded on account of a lack of fuel next winter.

Capt. John Moore is among the few reasoning and conservative vesselowners who didn't charter for the season at starvation rates. Figuring on the situation for medium-sized tonnage he concluded that a fair living rate of freight, should and would be procured, at least some time during the season, that there was no use in dubbing around as vessels had been doing for a couple of seasons past, working his property to pay wages, fuel bills, etc., and then scraping at all corners to pay the lusty premium charged by underwriters. On the whole, if cargoes had to be carried, some freight ought to be earned for doing so. The logic, thus held by Capt. Moore, early in the spring, is likely to permit the purchase of a little Christmas present this winter, besides giving his fleet an extra coat of paint next spring.

Speaking this week on the subject of lake levels, Mr. R. C. Wetmore, secretary and treasurer of the American Ship Building Co., coincided with the opinions expressed by the best authorities on this question and he is at one with Capt. Alex. McDougall, Duluth, in stating that any large volume of water drawn by artificial means from the present natural supply must perforce change the levels, and as a consequence, affect currents in the connecting channels. Mr. Wetmore also spoke of the already diminishing source of supply through denuding the watershed of a portion of the lake supply by cutting down trees, etc., as well as by the vast increase of population at all lake cities. Mr. Wetmore will give the question further consideration, as he is not certain that the effect of opening one extra outlet would be felt in the course of, say, one, or perhaps two seasons.

Now that Capt. Benham is Deputy Collector of Customs at this port, cargo boats carrying passengers had better keep a good lookout, and, as a precaution, ship as near a double crew as possible, this can be done by having a lamp trimmer and his mate, if there are any juveniles, the mate could have one or two assistant clerks, sex immaterial. The steamer Ketcham was caught last week and mulcted to the tune of \$500, this week it is the T. D. Stimson that has been making a floating hotel of herself, for which her master has had to put up, or down, the spondoolicks. A couple more welts like this, duly enforced, and the deputy collector will save the administration his salary for the year. Next season the novices will know how to ship those they want to carry, though of course a Lilly Langtry might not wish to sign the articles as a "jimmy ducks" or loblolly boy to the cook's mate assistant.

Speaking of coal freights a local journal says: "These marked advances are certainly a great hardship in the coal trade, especially with shippers who sold coal delivered." The writer of the above is not supposed to be printing a coal trades journal, either. If the present rates of freight on coal, not yet delivered, is hard on the coal shipper, I would like to ask what the shippers have been doing with the vesselowners for these handful of seasons past. Time was, when they wouldn't give a vessel a cargo at any old price, unless they fueled her. They were not too hard to offer vessels ten, fifteen or twenty cents a ton when they could as easily have paid fifty cents. Vessels may go along for a few trips without much extra outlay, but it takes a fair living, instead of a starvation rate of freight, to keep them up and in the condition that they always should be. What's the use of coal shippers congratulating themselves, or those who this season squeezed in 600,000 tons to Lake Superior at a 30-cent rate instead of now paying the going rate of 60 cents. Let the carrier shake hands with himself once in a while and be in a position to do justice to his vessel, her master and crew.

At a Wedding Breakfast.—Old gentleman proposing health of happy pair: "As for the bridegroom, I was present at his christening; I was present at the banquet given in honor of his majority; I am present here to-day—this happy day; and I trust I may be spared to be present at his funeral."—Ex.

DETROIT.

Special Correspondence to The Marine Record.

The steamer Unique has been attached for a small claim by Patrick J. Kean, Marine City.

The Craig Ship Building Co., Toledo, is kept busy on dry dock and repair work, besides the building contracts.

The old wooden steamer St. Paul has been bought for \$15,000 by Corrigan, McKinney & Co., Cleveland. \$5,000 would probably have got her last winter.

Capt. J. W. Westcott has chartered the Shawnee to carry a cargo of pine lumber from Ashland to Cleveland at \$3.25. On a portion of the cargo he gets \$3.50.

The steel yacht Dungeness, formerly owned by Andrew Carnegie, has been bought by Frank W. Fletcher, Alpena, for \$80,000. She will be brought to the lakes next month.

Labor agitators are again doing their level best to bring on a strike of the iron ore miners at Ishpeming, whereby 3,500 men would be affected, all are now at work except about 200 men.

As there was no intention of evading the law, the fine of \$50 imposed on the steamer John Smith for failure to surrender her license at Charlevoix has been remitted by the Treasury Department.

Capt. Wiley M. Eagan, of Chicago, was here this week looking after the sale of the Rome. Capt. Eagan said that he looked for a brisk and prosperous freight market along to the latest close of navigation.

Work on the steamer Morley is progressing, and no time will be lost in getting her ready to load cargo again. The Detroit Ship Building Co. are making the permanent repairs and giving her a thorough general overhauling.

Countess Shimmelmunn in the Danish yacht Duen, has been paying us a visit this week. Her missionary tour of the lakes has lasted a year, having wintered in Chicago. She is now homeward bound via the canals to Denmark.

Capt. Campbell, of the Ferry Co., is just thinking about getting his boats in shape for ice crushers. The Great Lakes Towing Co. should have the boss boat, though, and the Detroit Ship Building Co. could put her together for them.

Collision repairs are nearly completed and in a few days the car ferry Lansdowne will be ready for work again. The Algoma took her place in dry dock and the next on the list is the W. B. Morley, the cargo boat that collided with the Lansdowne.

Work on the new steamer for the Star Line Co. is progressing rapidly at the Wyandotte yards of the Detroit Ship Building Co., and a launch from that yard will soon be announced. This passenger boat will be listed to carry about 4,500 excursionists.

The passenger trade shows some signs of falling off, especially the upper lake rush. The Anchor line has had more than it could attend to this season and Percy E. Bourke, the agent here, detests not being able to accommodate everything that comes his way.

The work of the wrecking tug Favorite, Capt. Mart Swain, in releasing the large steel cargo steamer German, from a rocky bottom near Detour, is spoken of in very commendable terms. Messrs. Parker & Millen keep the Favorite stationed at Sheboygan with a full wrecking outfit, to assist anything in distress in the locality of the Straits of Mackinac or the "Soo" river.

The old steamer Atlantic, better known to those of the last decade as the Grummond line passenger boat, burned on Saturday night at the foot of 24th street. She made an attempt to pass out of sight in the same way last winter, but this time the job was a complete one. The Arctic, Pacific and Atlantic were formerly a crack trio of the fleet owned by the Union Transit Co.

Capt. Alvin Neal, vessel owner and master, died at his residence at Port Huron on Monday last, aged 53 years. Capt. Neal was one of the best-known vesselmen on the lakes. He was born in the township of Moore, Ontario, in 1846. He sailed for 30 years, the first boat of which he was master being the Yosemite. Later he sailed the Nelson Mills, B. W. Arnold and Gogebic. In 1888 Capt. Neal was appointed manager of the Port Huron & Sarnia Ferry Co., and afterwards he controlled the Pawnee Boat Co., the Mills Transportation Co. and the steamers Havana, Sparta, Concord and Britannic, holding a large interest in all of them up to the time of his death. Capt. Neal was a Master Mason, and a member of the K. O. T. M. For many years he had been a prominent member of the Shipmasters' Association.

The City of Rome, a wooden steamer of 1600 tons, built in Cleveland in 1881, and formerly owned by Wiley M. Egan, Chicago, and valued last year for insurance purposes at \$85,000, was sold by the U. S. marshal on Wednesday, to J. C. Gilchrist, Cleveland, for \$56,040. It is thought that with about \$15,000 repairs put on her she will be kept on her first letter. The Rome was nipped in the ice jam at Pelee Passage last winter, and it cost nearly \$30,000 to get her here, where she has laid all summer under a libel. The sale netted double the figures that had been placed on her by some of the would be purchasers. Mr. Gilchrist has made lots of money out of this kind of tonnage, and it is thought that he will rush cargo into her as early as possible and let her earn her cost this season, or as near as she can come to it.

Capt. John Robertson, of the steamer Darius Cole, with one exception the oldest vessel master in service on the lakes, was obliged to give up charge this week on account of heart trouble. The ancient mariner has floated around to the three score year and ten mark and may now take a rest to build himself up again.

The same old chestnut is getting stirred up again anent the local taxation of vessel property. Minnesota has recently given some of the other lake States a lesson on this subject by not heavily taxing vessels in that State for using the waters of the bay perhaps once or twice a season, therefore, it is not policy for Michigan to chase away what ownership is listed here now. It should be remembered that the Davidson fleet has just gone to Duluth and others will follow if owners are to be worried for the payment of unjust and unwarranted taxes on their vessel property. Everyone knows that floating property is unstable holding anyway, and state tax commissioner Oakman should be well enough informed to know this. Instead of trying to drive property out of the state as it now appears he is doing, he ought to facilitate its retention by all means in his power.

A good story is told on Capt. A. J. Fox, master of the speedy passenger steamer Frank E. Kirby. The most untoward event that ever happened to Capt. Fox, after about forty years' experience on the lakes, was being chased by a gangplank, an every day piece of old lumber. It appears that the Kirby was out in Lake Erie in a heavy sea, eight miles from Sandusky, when the gangplank was washed overboard, and out of sight among the tossing waves. When the Kirby tied up at Sandusky, the passengers got off on an improvised gangplank, and orders were given for a new one, but the next morning, when the captain looked over the side of his boat, the plank that had been washed away was seen floating in the water beside the very gangway where it had gone overboard. How it happened Capt. Fox cannot tell.

BUFFALO.

Special Correspondence to The Marine Record.

Shoal water has been experienced this week in the inner harbor and quite a number of vessels grounded.

Capt. W. D. Andrews, of life-saving fame, and who now conducts a news stand in Toronto, was married on Monday to Miss Wales.

W. J. Connors will pay freight handlers 25 cents an hour for Sunday work, and according to agreement will employ only union men.

A union of the Erie canal boatmen is now the ruling topic. An attempt was made to form a mutual benefit union four years ago but petty jealousies and suspicions knocked it out in short order.

On Monday next, September 4th, the C. & B. line intends to give a popular excursion of a few hours' lake ride, that, if the weather is pleasant, will be the most enjoyable way of spending the afternoon.

The coal rate of freight to Lake Michigan has advanced 10 cents this week, making the going rate 90 cents. Buffalo has led all ports in advancing coal freights throughout the season. Cleveland has been the slowest and has shown a disposition to keep rates down to the lowest notch.

THE RECORD is doing excellent work in its insistence upon placing the question of the maintenance of lake levels in proper hands. Managers of the transportation lines, individual owners, shippers and brokers seem to be too busy these times to give the matter the attention it deserves and commands. At the same time I hear nothing but praise of THE RECORD's articles and the opinions of those well qualified to discuss the effect of tapping the lakes.

The steel steamer Buffalo was successfully launched on Wednesday at 5 p. m. She will be placed on the route between this port and Chicago, in the general cargo trade, and operated by the railroad company, who built her at their own yards. She is expected to carry over 5,000 tons on a draft of 17½ feet, and steam about 11 knots per hour. A serious accident happened to a workman named John Sutherland, who was caught beneath a way timber and crushed.

FLOTSAM, JETSAM AND LAGAN.

Chas. Graves was drowned off the steamer Island Belle in the St. Lawrence river on Monday.

Miles E. Barry says that the report that the steamer Gordon Campbell was offered for sale last year for \$6,000 is untrue. He says he tried to buy the vessel and was asked \$15,000 for her.

A circular letter from Halifax, N. S., announces the appointment of Mr. J. S. Thompson as assistant to M. F. Plant, president and manager of the Canada Atlantic & Plant Steamship Co., Ltd.

While the schooner Ahira Cobb was lying at the dock in Manitowoc on Tuesday, Thos. Carney fell overboard and was drowned. He was about 27 years of age. The city took charge of the body.

A curious barometer is used in Germany and Switzerland. It is a jar of water, with a frog and a little stepladder in it. When the frog comes out of the water and sits on the steps a rainstorm will soon occur.

Walton (to fishmonger)—Just throw me half a dozen of those trout. Fishmonger—Throw them? Walton—Yes; then I can go home and tell my wife I caught 'em. I may be a poor fisherman, but I'm no liar.—Household Words.

A CENTRAL AMERICAN CANAL.

A map of America, showing the transportation routes of North, Central and South America, just issued by the Treasury Department, Bureau of Statistics, gives some interesting data on the relative distance between the commercial centers of the United States and those of other parts of the world, via the various existing and proposed water routes. It shows especially the routes followed by steamships in the commerce between the Eastern and Southern ports of the United States, and of Central and South America and the Western coast of the United States. The contrast between the distances now traversed in commerce of Eastern United States with Western coasts of America, and those which would be made practicable by an isthmian canal is interesting. The fact that the Isthmus of Panama lies almost directly south of the Atlantic coast ports, and that all commerce for the Western coasts of South America must now travel south and again back to the north a like distance before reaching the western coast of South America, indicates in some degree the loss of distance and steam power which must be utilized in reaching the western coast of South America, contrasted with that which will be practicable should a water route be opened across the isthmus. From New York to Valparaiso, on the western coast of South America, via the Straits of Magellan, is shown to be 8,460 miles, while via Colon and Panama, it is but 4,572 miles; while from New York to San Francisco, via the Straits of Magellan, is 13,090 miles, via Nicaragua it is 4,867. The commerce of the west coast of South America, as shown

merchant captain has been under arrest for nothing, except that he wanted to exercise the precautions that every skipper would take in the locality of the West Indies during the hurricane season, and, with a barometer dropping rapidly. This is the first instance where there has been a direct conflict of authority between army officers and merchant captains, but it is expected that similar occurrences may be heard of at any time as long as the present system continues.

FORCED DRAFT FOR MARINE BOILERS.

Although forced draft for increasing the rate of combustion was used in the United States Navy during the Civil War, it did not come into general use for naval vessels until about 1882, and in the merchant service still later, but since that time its use has become universal. Indeed, were it not for forced draft, boiler weights would be so great as to have long ago set the limit to speeds of the faster class of vessels. When natural draft alone was used the maximum rate of combustion with the best free-burning coal and good chimney draft did not reach twenty pounds per square foot of grate. With forced draft in large cylindrical boilers there are now numerous reliable records of 40 pounds per square foot, while in the locomotive and water-tube boilers 80 pounds is now a common rate, and data have been published of over 100 pounds.

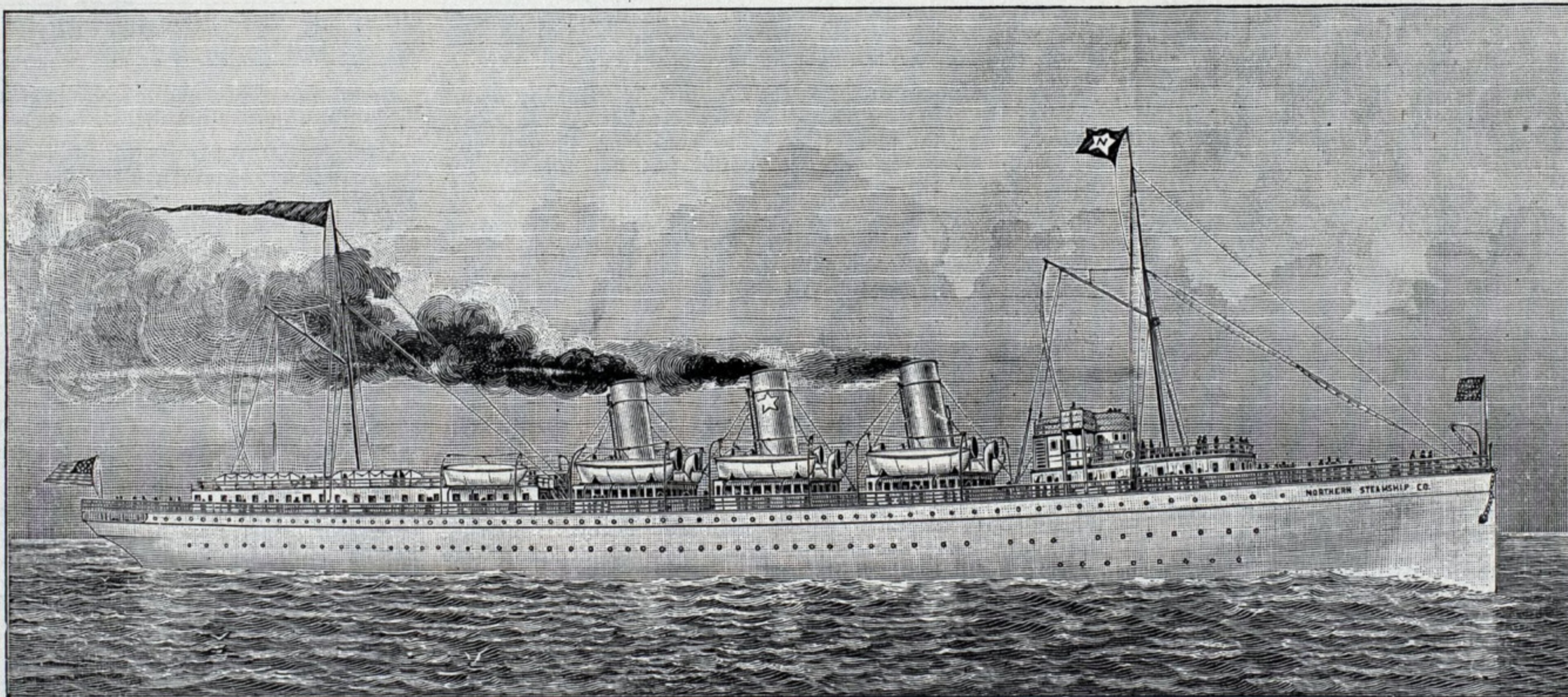
While the economy of evaporation at these high rates of combustion is not so great as under natural draft, the enormous reduction in boiler rates is very marked. Trials of

WHERE THERE IS NO TWILIGHT.

The days and nights are of equal length. The sun knocks off promptly at six o'clock in the evening and gets up at six in the morning with equal regularity the whole year around. There is no twilight, no gloaming, no interval whatever between daylight and dark—only a brilliant illumination, the sudden disappearance of a red ball into a blue ocean, a spread of flame color over all the western sky for a few minutes and a purple haze in the east. Then the surface of the ocean, like the heavens, is lighted with millions of strange and shifting stars, for the water is so impregnated with phosphorus that each tiny wave is tipped with light, and the foam that follows in the wake of the vessel is often like a stream of fire. Sometimes you can see porpoises swimming along the bow of the vessel livid with phosphorescent light and followed by a streak of sparks like a comet's tail. The Southern Cross, with the right arm tipped out at proper angle, lies straight ahead, in the midst of myriads of unknown worlds that look strange to those accustomed to the northern constellations. Under the left arm is a large black spot in the heavens, brightened by only a single modest star, which the sailors call "the devil's dinner bag." Over the stem of the vessel in the early evening you can plainly distinguish the familiar constellation of the "great bear," but it goes to bed with the children.—Guayaquil Corres. Chicago Record.

A LONG-BURIED STEAMER.

After years of futile effort the wreck of the steamer Arabia,



TWIN SCREW STEEL SISTER SHIPS NORTH WEST AND NORTH LAND, EXCLUSIVELY PASSENGER STEAMERS.

Built by the Globe Iron Works Co., Cleveland, for the Northern Steamship Co.; J. J. Hill, President. Dimensions—386 feet over all, 360 feet keel, 44 feet beam, 34 feet depth of hold. Quadruple expansion engines and Belleville boilers.

by the publication of the Bureau of Statistics, which this map accompanies, now amounts to over \$100,000,000 annually, and of this sum but \$15,000,000 is with the United States. The imports of Chile, Peru, Ecuador and Bolivia amounted in 1897 to over \$50,000,000, and of this amount less than \$5,000,000 was from the United States. Thus, in that part of the commerce in which the United States producers and manufacturers are most interested, the export trade, the United States now obtains less than ten per cent. of the trade of the Pacific coast of South America.

SOLDIER VERSUS SAILOR.

What naval officers predicted would happen occurred recently in Havana harbor when a question of authority arose between the civilian commander of a transport and a captain and quartermaster in charge of the troops on board. The trouble was caused by the desire of the skipper to take his vessel to sea when his barometer told of an approaching storm, and the insistence of the army man that he should first unload. The soldier officer knew as much about navigation as the sailor did of military tactics, but he upheld his dignity and had the skipper put under arrest.

All the marine journals in the country have expressed their disgust at the absurdity of an army officer telling a merchant captain that he does not know his business, and there is to be a meeting in New York, when some War Department officials will try to have the editors cease their criticisms. The

boiler of the United States torpedo boat Cushing, for example, show an increase in I. H. P. per ton of boiler of over 50 per cent. when the rate of combustion is increased from 24 to 40 pounds per square foot of grate, which means a decrease in weight per I. H. P. of over 33 per cent.

The question of economy under forcing was for a long time ignored, designers being contented with great gain in power. At the present time, however, the question of economy under forcing is receiving great attention, and we may confidently anticipate that this will be one of the coming features of marine engineering.—Commodore George W. Melville, U. S. N., in Cassier's Magazine.

WHILE on a visit to the United States, Naval Constructor Neudeck, of the German Navy, had unusual facilities extended him for examining the constructions of our ships, speaking of which he says: "As a result of my visits to all your great shipyards, I can say that the new ships now building for the navy are among the finest in the world, if they are not superior to all others, as I am sometimes inclined to think. The reason for the excellence of these ships, and others that are ready, I seek in the intelligence of your workmen, and in the mechanical genius of the whole nation. Work is expensive here, but the result is better work, and a greater feeling of responsibility on the part of the workmen who draw high wages. A secondary result of these conditions is that the workman has both incentive and opportunity to obtain better education.

a stern-wheel boat that was lost in the Missouri river in 1846, near Parkville, Mo., has been located. The Arabia carried a cargo of 400 barrels of Kentucky whisky, and men have hunted for it in vain for over fifty years. It was not until last fall that the discovery was made. Previous to that the search had been conducted in or near the river channel. As told recently in the Chicago Inter-Ocean the channel of the Missouri is constantly changing, and for this reason no wrecks are ever found in the bed of the stream—they are covered up by made land, washed down by the spring floods, and over them grow crops of grain and grass.

The wreck of the Arabia was located by sounding rods in a cornfield, a mile away from the present river channel, and buried under thirty-two feet of soil. Over 160 acres of land had been sounded and examined before the strike was made, the search being conducted by a syndicate of old river boatmen who knew there was a fortune in the cargo if it could be recovered.

When the Arabia was sunk the whisky she carried was worth 75 cents a gallon. To-day there are men in New York ready to pay \$40 a gallon for the same liquor, the advance in value being due to its improvement in quality brought about by its fifty-three years of "aging." At \$40 a gallon, allowing for leakage, etc., the whisky is now worth about \$1,250 a barrel, or \$500,000 for the entire cargo.

THE total displacement of ships now under construction for the British navy amounts to no less than 488,000 tons.

JAMES J. HILL.

(BIOGRAPHICAL SKETCH.)

James J. Hill, president of the Great Northern Railway and the Northern Steamship Co., was born in upper Canada on the 16th of September, 1838. His grandfather was one of the earliest settlers on what was known as the Canada Company's land, for he settled with his family in 1826 near Guelph, in what was subsequently the County of Wellington. Mr. Hill, when a boy, attended Rockwood Academy, a Quaker school, from his 7th to his 15th year, and there acquired a good knowledge of mathematics and a fair start in Latin. He left school upon the death of his father, and was a clerk in mercantile business for two years.

He left Canada early in 1856, with a light purse and a lighter heart, to make his way in the world. After traveling through the Eastern States he settled in St. Paul, in July 1856, and engaged with Bronson, Lewis & White, agents of the Dubuque Packet Co., as shipping clerk. He remained three years with that firm, one year with Temple & Beaupre, and four years with Borup & Champlin, who were agents for the old Galena Packet Co., and the Davidson line.

In 1861, with E. Y. Shelley, he raised a company of cavalry for the war of the Rebellion. The service of the company was not received by the State of Minnesota, but under Capt. Shelley the company afterward became a part of an Iowa cavalry regiment.

In 1865 he took the agency of the Northwestern Packet Co., the successor of the Galena Packet Co., and continued as agent of this company until the consolidation of the Northwestern and Davidson lines in 1867. From 1867 to 1869 he was engaged in the general transportation and fuel business, and they were consignees and agents of the St. Paul & Pacific Railroad.

In 1870 he established the Red River Transportation Co., and opened up for the first time, regular and direct communication between St. Paul and Fort Garry. In the fall of 1871 he consolidated the Red River Transportation Co. with Kittson's line.

Later, in 1873 and early in 1874, in connection with Hon. Donald A. Smith and N. W. Kittson, he took up the task of acquiring defaulted bonds of the St. Paul & Pacific Railway.

He began active negotiations with the Dutch committee in Holland, which resulted in the purchase of the bonds of the St. Paul & Pacific Railway Co., and the acquisition of its railroad, which was reorganized as the St. Paul, Minneapolis & Manitoba Railroad Co.

In 1878 he sold the Northwestern Fuel Company to E. N. Saunders and the late Hon. William L. Scott, of Erie, Pa. From 1880 to 1882, in connection with Messrs. Geo. Stephen, Donald A. Smith, R. B. Angus, Morton, Rose & Co., of London, and other capitalists, making ten in all, he engaged in the organization and building of the Canadian Pacific Railway. In 1883 he sold out his interest in the Canadian Pacific Railway to his associates mentioned above, and since that time has devoted his entire time to the business of the St. Paul, Minneapolis & Manitoba Railway Co., lately known as the Great Northern. He was general manager of the Manitoba company, and had charge of its affairs from its organization in 1879 until 1882; was vice-president from that time until 1883, and has been president from that year to the present time.

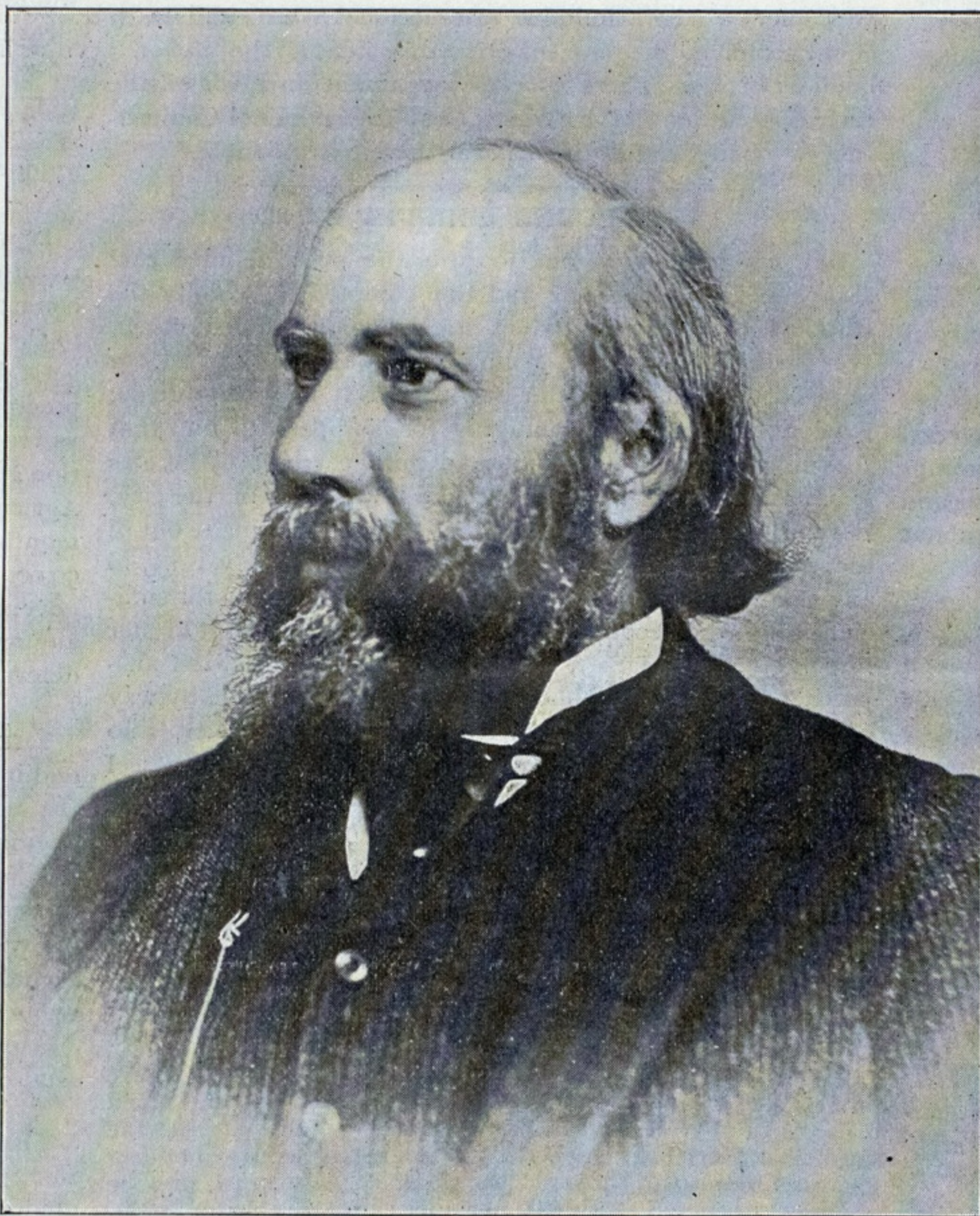
In 1888 Mr. Hill placed a contract with shipbuilders at Cleveland, O., for a fleet of six high-classed steel cargo steamers, and these were placed on the route between Buffalo and Duluth, since which time the trade has developed sufficiently to call for the chartering of other large steamers from time to time.

In 1894 plans for two steel twin-screw passenger steamers were got out by the Cleveland shipbuilders, and contracts signed for their construction. These boats named the North West and North Land are kept exclusively in the passenger trade on the route between Buffalo and Duluth, calling at Cleveland, Detroit and Mackinac throughout the season, and they represent the highest class of marine architecture, as well as the most select and recherche mode of lake travel.

Mr. Hill is a typical American citizen, who has connected his name indissolubly with the Northwest. His life ought to be a lesson to American young men, as embodying in the

highest degree what can be accomplished by ability and industry.

In 1873 the St. Paul and Pacific Railroad Co. defaulted in the payment of its bonds, and passed into the hands of a receiver. He had become thoroughly familiar with the business of the road, and with the enormous resources of the country tributary to it, and to its projected lines. He had seen the moderate stream of traffic which he controlled over the railroad and its steamboats connections on the Mississippi and the Red rivers, grow and widen in volume every year with amazing rapidity. He had watched the gradual increase of immigration into the promising region tributary to the road and its projected extensions, and he foresaw that the time was swiftly approaching when an industrious population would be spread over all the fertile acres of the Red River Valley, and the Northwest, which should be rendered accessible by railroad. When the St. Paul & Pacific Co. went into bankruptcy, Mr. Hill was better prepared by his pursuits and experiences, than any other man living, to understand the immense value of the prize which had slipped from its grasp. He knew what was almost unsuspected in the business and financial world, which deals with railroad

**PRESIDENT JAMES J. HILL.**

Head of the Great Northern Railway and the Northern Steamship Co., the Railway and Steamship King of the Northwest.

properties, that when the company had sunk exhausted under its burdens, it had already reached the threshold of the most brilliant possibilities of development under a vigorous management.

The opportunity was a grand one, and he was the man for the opportunity. Other men may easily have seen it, but he alone among them all was large enough to understand it in all the breadth of its significance, and strong enough to seize it with a firm and masterful clutch. If it was at first a dream, the dream soon became a purpose. It became his fixed and uppermost idea to get control of the road, and he set himself to the task of working up the combinations necessary to that difficult achievement. There were \$27,000,000 outstanding of the defaulted bonds of the company. They were of many different classes and values, and were mostly held in Amsterdam, where they were represented by what was called the Dutch committee, who were appointed by the stockholders to look after their interests. They were so thoroughly discredited that it was possible to buy them at a low figure. Armed with these facts Mr. Hill succeeded in interesting in his scheme his associates in the Red

River steamboat business, Norman W. Kittson and Donald A. Smith. Independently of other considerations Mr. Smith lent a favorable ear to Mr. Hill's project, because it was greatly to the advantage of that company that a railroad should be built to the borders of the territory in which its trading operations were conducted. But although favorably disposed they could see no way in which the money could be raised to carry out the project.

But Mr. Hill clung to it with a tenacity and determination which finally triumphed over all obstacles. It was not till 1876 that negotiations were commenced by Messrs. Hill and Smith with the Dutch committee to find out at what prices the bonds could be purchased. In 1877 Mr. George Stephen, president of the Bank of Montreal, a friend of Mr. Smith, was interested in the enterprise. With his aid negotiations were continued with the Dutch committee, which culminated in February, 1878, in the purchase of all the bonds represented by the committee, which embraced nearly all outstanding.

The history of the Great Northern Railway under his management shows from the start that a master hand was at the helm.

The history of the other great railroad enterprises in this country may be sought in vain for a parallel to the achievements of Mr. Hill. Others have attained eventual success only through a series of embarrassments and failures which have often entailed immense losses, if not upon themselves, at least upon those who had invested in their stocks and bonds. But the history of Mr. Hill's railway management has been that of a continuous career of success uninterrupted by a single mistep or failure. Since the day he assumed control of the property not a dividend has been passed. No investor in his enterprise has lost money by putting faith in him.

Passing to the private life of Mr. Hill, his friends know him for one of the most genial and companionable of men. He is a talker and he has studied many subjects so deeply that he usually has something to say that is worth saying. Whether called upon to speak in public, as he sometimes is, or in the freedom of private conversation, he impresses his hearers with the wide range of his information and the breadth and originality of his views. He always likes a little fun and nothing suits him better when his old acquaintances are about him than to recall the amusing incidents of their early life in St. Paul, when they were all boys together, and the practical jokes they played upon each other.

He was early and happily married and rejoices in a family of nine, three of whom only are boys. A man of warm affections, no one more keenly enjoys the pure pleasures of domestic life than Mr. Hill. His home has always been the capital center of his thoughts and dearest interests, his most welcome retreat from the cares of business. Although the stately, but severely plain mansion on Summit Avenue, St. Paul, Minn., with its interior of rich but simple and tasteful elegance, has replaced the more modest abodes in which his children were born, his daily habits and style of living in the midst of these sumptuous surroundings are as plain and unostentatious as they always were.

A CORSICAN engineer named Orecchioni has invented a new "submarine sentinel," being "an electric auto-indicator preceding the vessel at a distance of 300 or 400 metres, and connected with it by two flexible cables kept taut by the propulsion of the submarine sentinel, properly so-called, which moves by electric power. The cables convey the electric energy from the generating dynamo on board to the receiving dynamo contained in the body of the sentinel, and also transmits instantaneously to the officer on the watch, by special wires, an electric signal indicating the presence of any obstacle, emerging or submerged, such as the hull of a vessel, a wreck, rock, or iceberg." The invention has gained the grand diplome d'honneur at the International Congress on the Saving of Life at Sea just held at La Rochelle.

MERCHANT & Co., of Philadelphia, recently made a shipment of 30,000 pounds of seamless drawn condenser tubes to Glasgow, Scotland.



ESTABLISHED 1878.

Published Every Thursday by

THE MARINE RECORD PUBLISHING CO.,

Incorporated.

C. E. RUSKIN, - - - - - Manager.
CAPT. JOHN SWAINSON, - - - - - EditorCLEVELAND, - - - - - CHICAGO,
Western Reserve Building. - - - - - Royal Insurance Building.

SUBSCRIPTION.

One Copy, one year, postage paid, - - - \$2.00
One Copy, one year, to foreign countries, - - - \$3.00
Invariably in advance.

ADVERTISING.

Rates given on application.

All communications should be addressed to the Cleveland office
THE MARINE RECORD PUBLISHING CO.,

Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

CLEVELAND, O., AUGUST 31, 1899.

DON'T rob the chain of lakes of their natural supply of water. The danger of one interest concerns all.

THE MARINE RECORD returns thanks to the several prominent daily newspapers at lake ports for their prompt assistance in espousing the cause of lake transportation and cognate interests and endorsing our efforts to bring about means whereby lake levels can be maintained.

THE Rockefellers, Hannas and Carnegies, of the Lakes, can not do less than establish a "Great Lakes Shipwreck and Humane Society," primarily, to recognize individual acts of bravery and heroism in saving life, ultimately, to endow a home, or retreat, for the aged and incapacitated masters, engineers and pilots, and to render pecuniary assistance to the worthy widows and orphans of those who spent their lives in the rank and file of the lake service.

SOME time ago statistical experts were calmly figuring on producing just enough new lake built tonnage this season to offset the vessels taken to the coast, a part of which, however, returned to the lakes. The season had not far advanced before this production theory was knocked galley west, higher'n a kite, so to speak. Now it is found that there is not even a statistical relation between supply and demand, while the cry of overproduction of tonnage, building too many ships, etc., has no enunciators, much less believers.

OUR campaign to arouse interest in the maintenance of lake levels is already taking effect. Now is the time to thresh this question out thoroughly for the present and future guidance of all lake marine interests. There is no use of building large vessels, docks, wharves, loading and discharging facilities, nor advocating the conservancy and further improvement of rivers and harbors, etc., if we are deliberately intending to diminish the natural levels, or as near there as they exist at the present time. In the words of Admiral Dewey, "Fire when you get ready" your communication on this subject to the MARINE RECORD.

AS THE lake-built sailing yacht Genesee gained the Canada's cup by out sailing the Canadian yacht Beaver, so may the Columbia outclass the Shamrock. There is a little latitude, a give and take allowed in the Columbia-Shamrock race. The Genesee won the first three and only races sailed. The Columbia can sail five to gain three, but win she must. It is an unfortunate occurrence, if the report is true that the Shamrock's hull is strained through towing across the Atlantic, such a fault would badly handicap the Shamrock, but we hope that she will put up a good showing in any case. She is entitled to the best of luck, and every craft has a lame side anyway.

COMPOSITION OF BOARD.

A basis for the appointment of members for the Great Lakes International Commission, or permanent Board, whose province it would be to take cognizance of and render decisions in all cases where international equities in the lake levels might be endangered by diverting the flow of water, etc., could probably be furnished according to the extent of the national territory or coast line lying between Montreal and Duluth. On the face of the proposition, the Dominion of Canada has equal rights, and should have as complete a representation on such a Board as the United States, and this, too, irrespective of our larger and vastly superior maritime and commercial interests, as well as a much greater population. The deliberations of the joint commissioners, when convened as an advisory board, would be invaluable in generalizing and forming mutual laws for the protection of the Great Lakes' fisheries, questions on canals and their usage, influences, etc., adequate aids to navigation and desirable improvements so as to increase and facilitate commerce from an interested and amicable international standpoint. Such measures, reports and deliberations would pave the way toward an earlier adoption of those features involved in the industrial and commercial development and advancement of the illimitable international West—and be of equal benefit to the citizens on either side of the national boundary line. There is every argument in favor of the early appointment of a Great Lakes International Commission or a body conforming as near thereto as possible.

DELUDED SHIPPERS.

Our sympathy goes out towards the poor deluded coal shippers, both the men and the commodity, chiefly the shippers though, the product itself is not deluded much. We perceive that these symptoms should be curbed, or reined somewhat, no matter how painful it may be to do so. No doubt it is very discouraging for shippers to find that they must now pay for a thousand mile carriage by lake as much as it costs to move the coal a few blocks in the city. Formerly it was a pleasure, in fact a virtue was made out of the necessity and coal transported gratis, at any time, to anywhere on the lakes. Now the tow-barge asks for sufficient freight to recoup herself for the life taken out of her tow line, and a steamer, the price of the fuel used in transporting the black diamonds, with a little on the side by way of defraying the costs of lubricants, etc. Yes! There's no doubt but that these sympathies need curbing. The vessel and her apparel, also the master, owners and crew, chiefly the latter, need not get lachrymose in their sympathy for the coal cargo furnishers these times. There'll come a day they say, some time, when small boats may take a rest. It is a fair, square policy to pay as we go, pay and go.

THE following asinine utterance has been shoved around to some of the lake daily newspapers this week:

"Although neither master nor owners will admit it, there are several wooden vessels that have repeatedly been loaded to a depth of 18 feet 3 inches to 18 feet 5 inches during the past two months. Such vessels were, of course, taking chances in getting through the rivers. This must now be stopped, or these vessels will not only cause trouble for themselves, but for others. Reports from all river points are to the effect that the water is getting lower and cargoes must be materially lightened."

So, the master nor owner of wooden vessels won't admit that they load their vessels, and there are several of them. Wonderful news! But why wooden vessels pray? What proportion to the entire lake tonnage, does several wooden bottoms, their masters and owners, bear to the total lake tonnage? Does our "frind the inimy" want a special act of Congress passed, so as to fix a load line on these several wooden vessels? Behold, an American Plimsoll has come to judgment. Let's have a load line, and a light line, and a freight line, and every other sort of a line commission appointed, to chase up these several recalcitrant wooden vessels, their masters and owners, and to be especially instructed to look after the wooden part of it. "This must now be stopped." Gott in Himmel, who says so, where did that "must" come from? Must stop wooden vessels loading to 18 feet 3 inches to 18 feet 5 inches, who owns or manages vessels anyway, who pays their bills, not only can it be asked, where are we at, but what are we coming to? Wooden vessels must be stopped loading and cargoes must be materially lightened, materially lightened is good, but how you're going to do it with a pile of iron ore, is a poser. With a bulk cargo, such as coal, for instance, we can see a way to make it materially lighter, but, only after a process of incineration, though in this shape it

would not be a cargo-carrying or freight-earning commodity. It's a pity that some of the lake daily papers can't discriminate a trifle in printing marine items, or they would never set such twaddle. In this case, masters and owners of several wooden boats, and they must be large boats to load to the depth stated, are arraigned on an indictment for not admitting, then, for not admitting, they must be stopped from loading, and, as if this was not agony enough, they are perfunctorily ordered to lighten material which can't be lightened, after loading, yet, "cargoes must be materially lightened." Oh, Lordy! It's a case of jettison or lighter we suppose, but why either? Who is doing this "must" part of it, does 18 feet of submersion reach nearer the bottom surface in a wooden hull, than if loaded in an iron, steel or composite one. What musty, superficial, shoal-like bar has this "must" mandate emanated from? These several wooden bottoms, their owners and masters had better be boycotted forthwith, law and order should be enforced at the point of the bayonet, even if it cost the U. S. S. Michigan several charges of beans and peas to fire into and halt these several wooden vessels, their masters and owners, until they had lightened the material and materially lightened their bulk cargoes, even then p'raps the masters of wooden vessels, wouldn't. However, the writer of the item is right, in a measure, piracy, barratry, or acts deemed *hostis humani generis* must be put down while the water is getting lower at river points. Oh, but that word "must" is a daisy, and the conjugation of would, wooden and wouldn't is singularly unique in its application at this time.

It would be in order to learn from the Department of Agriculture something about the present topography of the country forming the 250 square miles of watershed tributary to the Great Lakes. How many thousands of acres have been denuded of their forests, thereby lessening the flow of precipitation to the lakes, and to what extent has the cultivation of land caused an increased evaporation and absorption? The Weather Bureau branch of the Department of Agriculture can perhaps give accurate figures regarding the monthly and mean of each season's evaporation over the 90,000 square miles of lake area. Each department of the government should be called upon to add its quota towards aiding the investigation now being set on foot relative to a determination of the economy ruling lake levels.

THE RECORD asks its readers for well advised opinions and intelligent discussion relative to methods necessary for the maintenance of lake levels, also the probable effect of opening numerous artificial outlets from these inland seas. It is not absolutely requisite that our correspondents should be past grand masters in the higher branches of the science of civil engineering. Algebraical hydraulic formulae counts no heavier than the every day common Roman numerals and a spade is a spade, if it is a spade, in the free-for-all discussion of this very important, and to many interests, vital question.

THE special Electric Railway number of Cassier's Magazine, just issued, contains 292 pages of reading matter, including over 200 engravings, comprising altogether 18 articles, prepared by men prominent in electric railroad engineering, and it constitutes a veritable text book on electric railways. The number covers thoroughly the development and present status of electric traction, and is highly creditable to the publishers of Cassier's from every point of view.

It WILL be remembered that the report of Col. Lydecker and his colleagues who investigated the feasibility of the Sault Ste. Marie water power canal strenuously urged that an international commission be appointed to consider that no permits be granted for similar projects until the assembling of such commission. This plan appears to have commended itself very highly to the Lake Carriers' Association, which has heartily indorsed it.

MARINE PATENTS.

Patents on marine inventions issued Aug. 29, 1899. Reported specially for the MARINE RECORD, complete copies of patents furnished at the rate of ten cents each.

632,089. Automobile torpedo. T. E. Barrow, Mansfield, O., assignor of one-half to L. J. McCray, same place, and H. L. McCray, Ashland, O.

632,105. Sea-going range-finder. John Donegan, Cincinnati, O.

632,126. Hydraulic dredge. Peter Kirk, Kirkland, Wash.
632,139. Wave-motor. W. A. Norton, New York, N. Y., assignor of one-half to Edward Mersereau, same place.

*WHAT IS THE OUTFLOW OF THE LOWER LAKES? ALL INTERESTS ENDANGERED.

In November, 1891, the Chief of Engineers, U. S. A., at the request of the secretary of the American Society of Civil Engineers, (who had been asked by the chief engineer of the Montreal Harbor Commission, of Canada, to suggest the subject,) ordered a set of observations made to determine the amount of water flowing down the Niagara river. The time was especially propitious, as the water was then very low.

The results of these measurements were somewhat unexpected, and they were repeated in May, 1892. The second set corroborated the first, and the whole formed the subject of a report to the Chief of Engineers, which appeared in his annual report of 1893. This publication was the first ever made in which, as a result of careful measurements, a relation between the level of the lakes and their outflow, or discharge, had been established and given to the public. Prior determination of this discharge had not attempted to detect this relation, and nothing more than a general determination of a season's work had been published. In all plans for the Chicago drainage canal, the early measurements had been taken, and those studying the subject chose such isolated figures as suited them best.

The report of 1892, being so late in appearance, long after the drainage canal was put under construction, escaped the notice of many who are interested in navigation, for two reasons. Some were too busy to see anything, unless especially brought to their notice. Others thought the whole matter already fully canvassed and settled. It is true there is nothing showing that the consent of Congress had been asked for this enterprise; certain that the subject had not been treated as an interstate affair, to say nothing of its being an international affair. The United States has always been slow to move; with its many sleeping rights, it has for many years been loth to exercise them. Not till 1888 did it begin to exercise positive legislation over its navigable waters, in order to preserve them for all its citizens. Each river and harbor bill since then is found to have sections strengthening the hands of those who wish to keep the waterways open and in good order for all classes of navigators. Not till 1890 had any prohibitive clause been enacted into laws, forbidding, for example, the destruction of channels by improper dumpings. Saw mills went their own unchecked way every year, clogging up streams. Railways bridged all smaller streams, in the States, without interference from the United States. Many other features can be quoted, but it is sufficient to say that all that is now changed. The adopted policy is to defend, as well as improve, all water courses now navigable, or probably navigable in the reasonably close future. Waterways are under the charge of the United States, and there is no likelihood of their being abandoned for some time to come.

With this an established fact, it is impossible to think the United States supervision shall not be extended to the Chicago drainage canal in due time. Under whatever law built, and for whatever purpose constructed, just as soon as it is shown that the canal affects, or becomes a part of the system of navigable waterways of the United States, some supervision or control of it must follow. When boats use it for harbor purposes; when its waters add to the Illinois river, or take from the lakes, they alter natural conditions and the matter rises for consideration under national authority.

The water levels of the Great Lakes are very delicate. Storms, barometric changes, rainfall, even tidal changes are felt. Records show at Buffalo no less than 13 feet as a total possible change between the lowest and the highest gauge readings. Each lake is a basin. The water is constantly pouring in, from not only one, but several inlets. The overflow, however, is not always out of the one inlet provided for that purpose; the second one, formerly at Chicago, has been plugged up.

As in our basins, when the water rises enough to take two, three or more of the small holes to carry it off, it is always to be noted that these holes are always carrying that surplus off; they do not wait until the water has time to pass from one end to the other. In the same channel the head alone governs the rate of overflow, and that head is measured by the gauge-reading at the outlet. That supply of water in the lake, the net supply, allowing for evaporation, is the sole cause of the outflow. The supply depends solely upon rainfall; but the lake, when it receives more than it has been

receiving, must discharge more; when it has less, there is less to run out. If the outlet be dug down, or new ones made, the water runs off faster than it ran off before.

The outflow is instantly affected by a changed inflow, provided there is enough such to increase or reduce the head. If we have a rainfall of one inch over the lake area, (and such are not uncommon events) there is a head of one inch to run off. But if there are two outlets to run out of, instead of one, this inch must run off sooner than through the one. If the new outlet should reduce the levels of Lakes Michigan and Huron about six inches, this effect will be produced in full in about two years; it is not then a question of many years, as some suppose.

We may feel very sure, therefore, that in this question two points are certain. 1. The drainage canal is not solely a State affair, but a national one. 2. The tapping the lakes must affect their levels. But it is said, first, that the changes in levels do not concern shippers, and then that, at most, the effect will be trifling.

If one watches carefully the course pursued by shippers, one would see that, as a rule, each vessel carries all that it can take and get out of its port, or into that it intends to reach. Vessel owners and managers are very shrewd, watchful men; they know what they can safely carry, allowing for storms and short detentions arising from passing causes; they average pretty well the practicable depths, and carry all the channels will stand. They are as conversant as are theorists about the effects of storms, but they keep good watch on ruling depths. Now, should it be certain that these average depths were reduced 3 inches, or 6 inches, they must load accordingly. And not only the large boats, but also the small ones using the small harbors, that the large ones cannot go into. All must lose the 3 or 6 inches, as it may be; and not for one or more trips, but for all trips, and for all time; a diminution of capacity is not a single tax, but a continuous one. A vessel that when light draws 6 feet, and loaded 12 feet, must lose 3 inches out of 72, say 4 per cent. in capacity each loading; a vessel drawing 12 feet light and 20 feet loaded, would lose somewhat over three per cent. in capacity at each and every loading.

Should the loss of levels be 6 inches, instead of 3 inches, then these figures become doubled. Will the loss be six inches or will it be three inches? This is an important question, and we have only the Niagara river discharge observations from which to answer it. These cover a range of about 1.8 feet. There were scattering observations outside these limits, but the mass of results was secured between gauge readings, mean lake level, the highest, and 1.85 feet. The "smooth curve" as published, enables us to note the fall of .53 feet on the gauge per 10,000 cubic feet per second for the first foot of fall, and .44 feet for the whole.

The observations, especially at the lower readings, are erratic, and indicate a need for more measurements, especially at these levels. This lower portion of the gauge should be studied, and additional observations made, and the board is a unit in suggesting the importance of a series of gaugings of the St. Clair river at the present time, for this purpose, and to furnish additional knowledge of the relation between gauge readings and discharge. The subject is of such general bearing upon the navigation of the lakes, that it demands careful treatment and full data. The Niagara data do not show how much Lakes Huron and Michigan would be lowered, even if .53 feet were the net loss to Lake Erie. The opinion expressed by Mr. Johnson that the effect on the two upper lakes would be some 15 per cent. greater than upon Erie, would seem to point to a probable loss of, say, .61 feet. This possible loss of 7 inches certainly is important enough to justify careful measurements of the discharge through the St. Clair. It is true that the law as it stands, and the intention of the trustees, contemplate the abstraction of only 300,000 cubic feet under present conditions; but after the canal is opened, measurements will not be so instructive, and we must assume that ultimately the entire 600,000 cubic feet per minute will be drawn from Lake Michigan, as required by the State law.

The abstraction of 10,000 cubic feet of water per second from Lake Michigan will lower the levels of all the lakes of the system except Lake Superior, and reduce the navigable capacities of all harbors and shallows throughout the system to an extent that may be determined, if at all, by actual measurements only. Under the laws of the United States these changes in capacity cannot be made without federal authority, and to enable the executive officers of the United States to act advisedly in the matter, it is necessary, in the opinion of the board, not only that these measurements be

taken, but that the money cost of restoring the navigable depths in channels and harbors be carefully estimated.

While the navigable capacity of all harbors and channels on the Great Lakes below St. Mary's Falls will be injuriously affected by diminution of depth, the navigability of the inner harbor of Chicago will be diminished also by the introduction of a current therein, which, in the present condition of the river, even with the minimum flow of 5,000 cubic feet per second, or 300,000 cubic feet per minute, is entirely inadmissible. The estimates of the effect of the drainage canal upon this harbor should also consider this element.

LAKE FREIGHTS.

The iron ore rate is keeping fairly well abreast of the advance in grain rates, and \$1.70 is now the going rate from the head of the lakes, Marquette \$1.40 with light chartering, Escanaba \$1.30 and \$1.20 to Buffalo and Ohio ports respectively. Some shippers have made charters for the balance of the season at a lump sum.

The grain rate advanced to 3 cents, corn, Chicago to Buffalo, 4 3/4 cents Duluth to Buffalo with fixtures made for next week at 5 cents, and a desire to charter ahead for October-November shipments, Toledo-Cleveland to Buffalo 2 cents.

Coal rates advanced to 90 cents on anthracite, Lake Michigan, and 60 cents to the head of the lakes. The same rate is asked on bituminous at Ohio ports, though a few cargoes have been loaded straight along at the old 50 cent rate, with the advance of 10 cents to minor or non-loading ports. A block of coal, Sandusky to Milwaukee, was offered at \$1, this advance because the vessel would need to change ports to load. Coal from the Pittsburg region is not being sent forward by rail any too lively on account of lack of cars.

Lumber shipments from Lake Superior are brisk at \$3.25 to \$3.50 per M feet. Insurance on vessels classed B 1, expiring September 15, will tend to stiffen the lumber figures for vessels on their first letter. The same will apply to coal cargoes, unless shippers carry their own insurance, and owners can at least cover the freight.

The \$2 rate of freight on iron ore, and that is where the rate is expected to land, means 5 1/4 cents to 5 1/2 cents on wheat. It also figures to 5 cents on corn, and this seems to be the objective point at the present time. It is useless to attempt to figure what phase the lake freight market may or should assume within the next 60 days. All hands are attending to their knitting and watching an opportunity to pick up a stitch, or a vessel, or a cargo or two, and their action can simply be recorded from week to week in a general resume, shorn of individual spurts or departures from day to day.

LETTERS AT DETROIT MARINE POST OFFICE

AUGUST 30, 1899.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Blamelt, Clark, Andaste	Mehlick, Geo.
Boynton, H., Ira Owen	Maudesley, D. W., Lansing
Bowen, G. H., McGregor	Mooney, Thos.
Butler, Frank, Avery	Morrisson, A., Livingstone
Baker, Geo., Martini	Muie, A. McG., Vera
Carrigan Thos.	McNeil, Neil, Williams
Cottrell, Harry	Paulson, Chris.
Dondero, Louis, Venezuela	Rottell, Jos., Burton
Fitzwilliams, L. L., Chemung	Sheppard Hyram
Gibson, Wm., Bessemer	Smith, W. E.
Gallarno, James A.	Souve Benj. Australia
Gibson, Harry, Business	Taylor, Bert.
Heller, Will	Thurston, P., McLaughlin
Harmon, Chas., Tuscarora	Willoughby, Alice
Irland, Josie	West, Chas., Seattle
Jackson, Art., Wolf	Waltz, Wm., Australia
Lee, C. A.,	Weimer, G. F., Maytham
Mutart, Alex., Ward	Woodman, T. K.
Mitchell, M. M., Fedora	Wagner, Jos., Superior City

The schooner Polly, now lying in the port of Bangor, Me., sound and seaworthy in every way, is said to be the oldest American vessel in existence which is still sailing. She was built at Amesbury, Mass., in 1805, and has had an adventurous career. During the war of 1812 she was a privateer, and captured 11 prizes from the British. She was also captured once herself, but was retaken. She is a vessel of 45 tons, and is now engaged in the coasting trade.

* Report of the Board of Engineers, appointed by the United States, on the probable effect of the Chicago Drainage Channel on the level of the Great Lakes, addressed to General William P. Craighill, Chief of Engineers, United States Army, in 1893, signed by General O. M. Poe, Major E. H. Ruffner and Major W. L. Marshall, of the Corps of Engineers.

Almy's Patent Sectional WATER TUBE BOILERS.

NOW USED IN

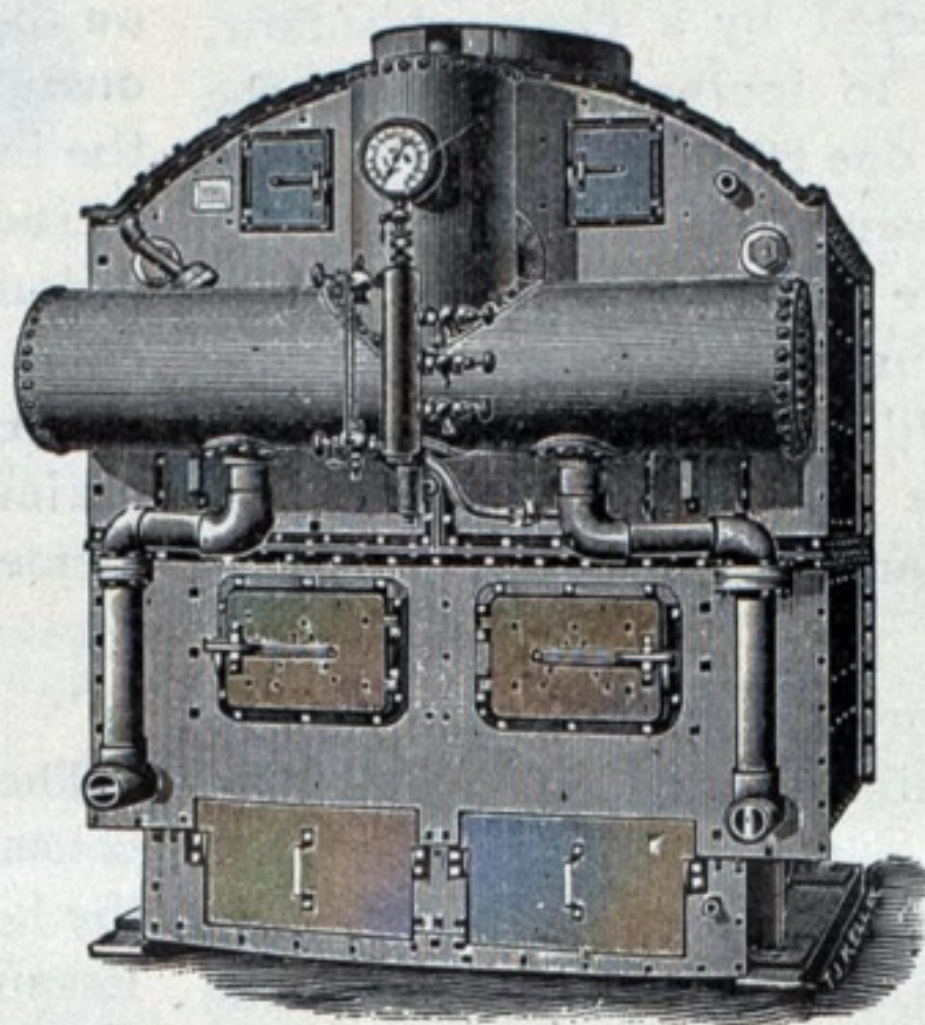
21 Passenger Boats from 70 to 160 ft. long.
61 Steam Yachts from 50 to 180 ft. long.

U. S. TORPEDO BOAT "STILETTO."

Numerous freight and fishing steamers, launches and stationary boilers are giving most excellent results.

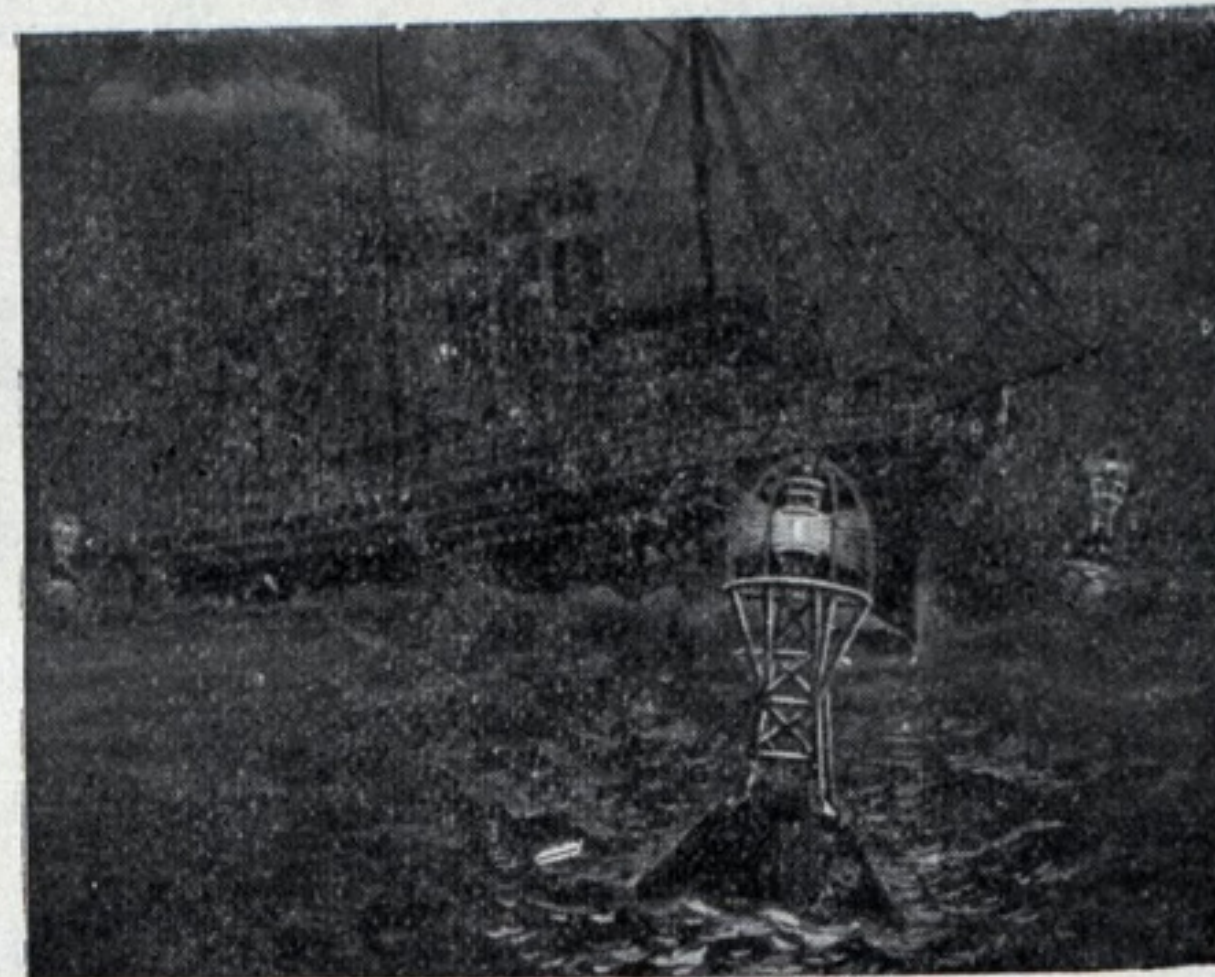
ALMY WATER TUBE BOILER CO.,

178-184 Allens Ave., near Rhodes St., PROVIDENCE, R. I.



Pintsch Gas Lighted Buoys.

Adopted by the English, German, French, Russian, Italian, and United States Light-House Departments for channel and harbor lighting. Over 800 gas buoys and gas beacons in service.



Burn Continuously

from 80 to 365 days and nights without attention, and can be seen a distance of six miles.

Controlled by

THE SAFETY CAR HEATING AND LIGHTING CO.

160 Broadway, New York City.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Time for Loading—Exclusion of Holidays.—The Pennsylvania statute relating to holidays (Act 1893; P. L. 188) does not make them obligatory, and, where it is not shown that the stevedore or men engaged in loading a vessel refused to work on holidays, such days are not to be excluded in computing demurrage. *Uren vs. Hagar et al.*, 95 Fed. Rep. (U. S.) 493.

Collision—Car Float—Duty to Carry Spare Lines.—Where a car float was equipped with mooring lines adequate to resist the effect of wind and rough weather, the failure to have spare lines sufficient to withstand both the force of the wind and the impact of the steamer that drifted against her was not a negligent omission on the part of the float, rendering her liable for damages done while adrift. *Slover vs. The Erie R. R. Car Float No. 4*, 95 Fed. Rep. (U. S.) 495.

Shipping—Construction of Charter Party—Provision for Quick Delivery.—A provision of a charter for quick delivery on board should be given a reasonable interpretation with reference to the character of the cargo, as well as its destination and the manner of stowage required, in order to facilitate its discharge. A requirement that the cargo shall be delivered as fast as the ship can receive it, does not render the charterer liable for demurrage, because all her hatches are not used at the same time, where the size and weight of the packages and the facilities of the wharf are such as to render such weight inconvenient. *Uren vs. Hagar et al.*, 95 Fed. Rep. (U. S.) 493.

Maritime Liens—Salvage Enterprise—Contract with Agent of Owners.—The local agent of the owners of a loaded barge, which had broken adrift at sea, employed a tug to go in search of it, agreeing to pay the tug \$100 per day for the search, and for bringing in the barge if found. The tug did not find the barge, which had been picked up by a steamer, and towed into port. Held that the service rendered was not one of salvage, for which a suit in rem is authorized under Adm. Rule 19, but merely a salvage enterprise, and, the contract having been made by an agent of the owners, who were apparently in good credit, must be presumed to have been made on their credit, and not the credit of the vessel. *The Enos Soule* 95 Fed. Rep. (U. S.) 483.

Maritime Liens—Insolvency of Owner—Effect of Receiver-ship—Proceeds of Insurance.—Where a court of equity, by its receiver, has taken possession of a vessel in proceedings against the insolvent owner, thus rendering it impossible for the holders of maritime liens against the vessel to enforce the same by proceedings in rem in a court of admiralty, and the vessel during a voyage on which she is sent by the receiver is wrecked, the insurance placed thereon by the receiver and collected by him after her loss will be treated as standing in place of the vessel, and will be disbursed in the same manner as though it were the proceeds of the vessel; the creditors entitled to maritime liens being first paid therefrom. *Cronenwett vs. Boston & A. Transp. Co.*, 95 Fed. Rep. (U. S.) 52.

Marine Insurance—Construction of Policy—Master's Draft.—An open policy of marine insurance provided for insurance from time to time "on advances and disbursements, secured by master's draft, pledging vessel and freight." A certificate was thereunder, covering advances by insured on a master's draft, which did not itself pledge the vessel or freight, but, when negotiated by the insured, the managing owner of the vessel gave a writing, which was attached to the draft, making it payable from first freights received at port of destination, and pledging vessel, owners, and freight for such payment. Held, that such draft was within the terms of the policy, the pledge made being within the authority of the managing owner. *Neall et al. vs. Union Marine Ins. Co., Limited*, 95 Fed. Rep. (U. S.) 491.

Construction of Charter—Stipulated Damages for Loss of Vessel.—The charter provided for the return of the boat in

as good condition as it then was, usual wear excepted; that the hire should be paid on signing the agreement; that the charterer should be liable for all damage to the hull or equipment; and that the value of the boat for the purposes of the contract should be considered as \$75,000. It further required the charterer to furnish a guaranty in the sum of \$75,000 to secure any and all losses and damages which might occur to the boat, or that might be sustained by the owner by reason of any breach of the contract. The instrument of guaranty conformed to such requirements, and expressly limited the liability of the company thereunder to the sum of \$75,000. Held, that the guaranty was intended to secure the hire, as well as the loss or damage to the boat, the full value of which must be considered as \$75,000 at the time the charter was signed; and hence, \$10,000 having been paid as hire, only \$65,000 additional was recoverable, under the contract, for its loss. *Moore vs. Sun Printing & Publishing Ass'n*, 95 Fed. Rep. (U. S.) 485.

Negligent Exposure of Cargo to Injury.—A foreign steamer arrived at the port of Charleston with a cargo of rice in bags, about two-thirds of which was consigned to libellant. The agents of the vessel gave notice that she would discharge on the following day at a certain wharf, which was uncovered, and that all goods not removed by sunset would be stored at the risk of the consignees. At about 11 o'clock in the forenoon, when the ship had discharged on the wharf about 2,000 bags of rice, only a small part of which had been removed by the consignees, a heavy shower came up, and the rice remaining on the wharf was damaged. It was a season when rains are frequent. There had been rain on each of the preceding days, and Showers were predicted for that day by the Weather Bureau. It was shown that there were covered wharves at which the ship could have discharged, and at one of which she did discharge the remainder of the cargo without injury. No custom of the port as to the discharge of such cargo was shown. Held, that under the circumstances, the ship was negligent in discharging the rice on an exposed wharf so much faster than it could reasonably be removed by the consignees, without taking measures to protect it from injury, and that she was liable for the damages, it not being shown that libellant was guilty of contributory negligence. *The St. Georg*, 95 Fed. Rep. (U. S.) 172.

VISIBLE SUPPLY OF GRAIN

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE Bushels.	BARLEY Bushels.
Buffalo.....	1,077,000	126,000	51,000	2,000	25,000
Chicago.....	5,993,000	1,691,000	900,000	156,000	21,000
Detroit.....	509,000	46,000	33,000	20,000	.....
Duluth.....	3,035,000	228,000	68,000	75,000	103,000
Fort William, Ont.	1,052,000	.....	.....	.....	.....
Milwaukee.....	66,000	2,000	.....	3,000	10,000
Port Arthur, Ont.	200,000	.....	.....	.....	.....
Toledo.....	2,184,000	443,000	420,000	13,000	.....
Toronto.....	71,000	.....	7,000	.....	14,000
On Canal.....	1,096,000	69,000	473,000	.....	.....
On Lakes.....	405,000	1,129,000	724,000	45,000	76,000
Grand Total.....	34,690,000	6,959,000	4,807,000	536,000	334,000
Corresponding Date, 1898.....	5,927,000	16,530,000	3,298,000	423,000	297,000
Increase.....	.....	.....	768,000	.....	.....
Decrease.....	1,517,000	1,006,000	.....	87,000	72,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

THE British Government keeps eleven vessels at work sounding, surveying, and charting the ocean beds to find out where dangers lurk. Last year ten thousand square miles were carefully charted in different parts of the world—Asia, Africa, and the South Pacific.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT.
OFFICE OF THE INSPECTOR, 10TH LIGHT-HOUSE DISTRICT.
BUFFALO, N. Y., Aug. 24th, 1899.

Dredges are at work deepening and widening the outer channel across the bar at the entrance to Sandusky Bay, Lake Erie, Ohio.

Notice is hereby given that during the progress of the work the buoys marking this channel may be temporarily moved to accommodate the dredges, or shifted to mark the edges of the new channel.

North shoal (outer) Red Spar-Buoy No. 8, in this channel, has been carried away, and will be replaced as soon as practicable.

By authority of the Light-House Board.

Inspector 10th L. H. District. FRANKLIN HANFORD,
Commander, U. S. N.

MUSKEGON PIERHEAD RANGE LIGHT STATION.—Notice is hereby given that the following changes will take place during September, 1899, at this station, at the entrance into Muskegon Lake and river, easterly side of Lake Michigan.

MUSKEGON PIERHEAD, FRONT.—The red lantern light heretofore exhibited from the outer end of elevated conduit will, on or about September 15, be shown at a height of 33 feet above the lake level, from an octagonal lantern, on the gable end of the fog-signal building recently erected on the outer end of the south pier. The conduit of 764 lineal feet will be taken down and replaced by an elevated walk.

On the same date, a 10-inch steam whistle will be established in the fog signal-house, and during thick and foggy weather the signal will sound blasts of 5 seconds' duration separated by silent intervals of 10 and 40 seconds, thus:

Blast	Silent interval	Blast	Silent interval
5 sec.	10 sec.	5 sec.	40 sec.

MUSKEGON PIERHEAD, REAR.—On or about September 12, the fog-bell located in front of the light-tower will be discontinued.

THE swift passage from port to port made by passenger vessels is apt to leave the voyager with the impression that the sea is a barren waste, but such an idea is wholly false. Even the sailing ships, bound though they may be to make the shortest possible time between ports, are compelled by failure of the wind to see enough of the every day life of the sea population to know better than that, and whoso, gives himself up to the glamour of sea study, making no haste to rush from place to place, but leisurely loitering along the wide plains of the ocean, shall find each day a new world unfolding itself before his astonished eyes—a world of marvels, infinitely small, as well as wondrous great—from the thousand and one miracles that go to make up the "Plankton" to the antediluvian whale fishing in its mere heroic phases is obtainable in deep-sea cruising as nowhere else.

A DISPATCH from Greenwich, Conn., to the Sun, Baltimore, says because a girl refused to be dared, a riot was narrowly averted recently at Shippan Point, near this place. Miss Mariel Russell, an English girl, and guest of her uncle, Robert A. Fosdick, was dared to run up the English colors from the flagstaff in front of her uncle's house on the Fourth of July. She did not wait for the dawn of the Independence Day, but flung the colors to the breeze during that day. That night flag and pole disappeared. Miss Russell made another flag and displayed it from an upper window. There it waved until sundown, while the mayor and two selectmen protested and one even went so far as to make all sorts of threats if the flag was not taken down. Contrary to the spirit of the foregoing, the Stars and Stripes everlastingly waved in the cities and sea-ports of the United Kingdom on the Fourth, as well as at all European capitals and in fact the world over wherever the interest of our citizens are represented. The Fourth is our day, but not solely so, from an international standpoint.

THE MAINTENANCE OF LAKE LEVELS.

The legislative committee of the Lake Carriers' Association has made such representations to the War Department, under whose jurisdiction Congress has placed the conservancy of navigable waters, that decisive steps are now likely to be taken on the important question of how to adequately maintain lake levels.

Mr. Frank J. Firth, president of the Lake Carriers' Association, forwarded a few days ago to Hon. Elihu Root, Secretary of War, a communication on this subject, containing, with other data, the following excerpt:

"Mr. Chas. H. Keep, secretary of the Lake Carriers' Association, sends me a copy of the letter he addressed to you Aug. 21, 1899, by request of our Committee on Legislation. The subject to which his letter refers is one of vital importance in the economical navigation of the Great Lakes and their connecting waterways. You are, no doubt, aware of the magnitude of the lake commerce, and of the fact that the shipping passing through the Detroit river is unequaled in volume and economy of service by that passing through any other strait in the world.

"In this connection permit me to ask your favorable consideration of the suggestion with which the enclosed communication appearing in the MARINE RECORD of July 20, 1899, concludes. An international commission of engineers to consider and report upon questions of lake levels is a recognized necessity.

"As to the proposed open cut canal through Canada from Lake St. Clair to Lake Erie, I beg to urge that the President of the United States may find an early opportunity to direct the attention of the Canadian government to the effect that any project of this kind would have upon the interests of the United States. It might operate to materially reduce the depth of water in the lake channels and harbors of the United States with disastrous results to its navigation and commercial interests. It may be much easier to discourage Canadian capital from embarking in an enterprise the United States has thus distinctly declared in advance to be a possible injury to its interests, than it would be to prevent the use of the canal after completion.

"The idea of an international commission of engineers to consider questions affecting lake levels has secured the unqualified endorsement of able engineer officers of the United States familiar with the character and extent of lake commerce." I will be pleased to supply any further information upon this subject I can command, upon your request.

The communication sent by the Secretary of the Lake Carriers' Association as mentioned in the foregoing, is as follows:

BUFFALO, N. Y., Aug. 21, 1899.

HON. ELIHU ROOT, Secretary of War,
Washington, D. C.

DEAR SIR: The Lake Carriers' Association, comprising nearly all the vessels engaged in the carrying trade on the Great Lakes, representing, as you are doubtless aware, an immense business interest, respectfully call your attention to the project of the Lake St. Clair and Erie Canal Co. to construct a ship canal from a point in Lake St. Clair just below the southern extremity of the United States ship canal to Lake Erie. The proposed canal is to be about 32 miles in length, of which about 19 miles will be a dredged cut through the Flats in Lake St. Clair, and about 13 miles through that portion of the Province of Ontario lying between Lake St. Clair and the northern shore of Lake Erie. This company is a Canadian company, and the Canadian newspapers say that the company is to begin work the coming winter, and that the canal is to be 21 feet deep at low water and constructed without locks. The width of the canal is not given, but judging from the proposed depth, it will be built to accommodate the larger lake vessels, and would be at least 150 feet in width. The canal is to be owned by a private company, which proposes to obtain a revenue by charging tolls for the passage of vessels.

Vessel interests on the lakes believe that the construction of such a canal would be a serious damage to their interests. The United States government has spent several million dollars in improving the waterway from Lake St. Clair through the Detroit river to Lake Erie. If a new outlet is constructed by this company to draw water from Lake St. Clair and discharge it into Lake Erie, the additional draft of water from Lake St. Clair will lower the level of that lake and of the Detroit river and impair the value of the expensive government improvements at Bar Point, mouth of Detroit river, Limekiln Crossing, Ballard's Reef, Detroit river, Grosse Point channel at the lower end of Lake St. Clair, and the St. Clair Flats ship canal. How much the available draft of water through this channel will be lowered by the construction of this canal is an engineer's question and depends of course on the cross sections of the proposed canal and the velocity of the current through it. The question seems to be of international importance and should be taken up by the United States government with the government of Canada. We respectfully call the attention of your department to its importance and ask you to set on foot such investigations with regard to the effect of the proposed canal on the water levels of the existing channel as will enable this government to make proper representation on this subject to the Canadian government.

Very respectfully yours,
C. H. KEEP, Secretary.

SUN'S AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset, by reversing the east bearing given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the Sun's setting. The bearing may be taken when the Sun's center is on the horizon, rising or setting. The three elements which may be obtained by taking these amplitudes are the quantities known as local attraction, variation and deviation.

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

Sunrise.	Amplitudes.	Bearing P'ts.	Bearing Comp.
Sept. 2.....	E. 10° N. = N. 7½ E. = E. ¾ N.		
Sept. 5.....	E. 9° N. = N. 7¼ E. = E. ¾ N.		
Sept. 7.....	E. 8° N. = N. 7¼ E. = E. ¾ N.		

LAKE ONTARIO, S. END HURON AND CENTRAL PORTION LAKE MICHIGAN, LAT. 44° N.

Sunrise.	Amplitudes.	Bearing P'ts.	Bearing Comp.
Sept. 2.....	E. 11° N. = N. 7 E. = E. by N.		
Sept. 5.....	E. 10° N. = N. 7¼ E. = E. ¾ N.		
Sept. 7.....	E. 8° N. = N. 7¼ E. = E. ¾ N.		

N. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Sunrise.	Amplitudes.	Bearing P'ts.	Bearing Comp.
Sept. 2.....	E. 11° N. = N. 7 E. = E. by N.		
Sept. 5.....	E. 10° N. = N. 7¼ E. = E. ¾ N.		
Sept. 7.....	E. 8° N. = N. 7¼ E. = E. ¾ N.		

LAKE SUPERIOR, LAT. 48° N.

Sunrise.	Amplitudes.	Bearing P'ts.	Bearing Comp.
Sept. 2.....	E. 12° N. = N. 6½ E. = E. by N. ½ N.		
Sept. 5.....	E. 11° N. = N. 7 E. = E. by N.		
Sept. 7.....	E. 9° N. = N. 7½ E. = E. ¾ N.		

With a compass correct magnetic, the difference between the observed and true bearing or amplitude will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the difference between the observed and the true amplitude after the variation is applied will be the amount of deviation on that course. If the correct magnetic bearing is to the right of the compass bearing, the deviation is easterly, if to the left, the deviation is westerly.

A number of gems are being found in the lake region, and quite a number of diamonds are being discovered. No less than seventeen well identified diamonds, varying in weight from one-half to more than twenty-one karats, have been discovered in the region of the Great Lakes. The localities in which these diamonds are found are distributed over an area nearly 600 miles in length and 200 miles in width, with its longer axis trending exactly northwest and southeast. Nearly all the diamonds were obtained from the deposits of glacial drift. The colors vary from white to white tinged with green and pure yellow. Several of these stones are remarkably fine gems.—Scientific American.

"A SEAMAN washed overboard," exclaimed Mrs. Jones, as she read a newspaper headline; "but he perhaps was so dirty they hadn't enough water on the ship."—Tid-Bits.

TOBIN BRONZE

(Trade-Mark Registered.)

Tensile strength of plates one-quarter inch thick, upward of 78,000 lbs. per square inch. Torsional strength equal to the best machinery steel. Non-corrosive in sea water. Can be forged at cherry red heat. Round, Square and Hexagon Bars for Bolt Forgings, Pump Piston Rods, Yacht Shaftings, etc. Rolled Sheets and Plates for Pump Linings and Condenser Tube Sheets, Centerboards, Fin Keels and Rudders.

The Ansonia Brass & Copper Co.

SOLE MANUFACTURERS,

Send for Pamphlet.

99 John St., NEW YORK.

S.F. HODGE & CO.

MARINE ENGINES,
PROPELLER WHEELS,
DECK HOISTERS,
MARINE REPAIRS.
312 ATWATER STREET,
DETROIT, MICH.

Chas. E. & W. F. Peck,

58 William Street, New York City. Royal Insurance Building, Chicago, Ill.
C. T. BOWRING & CO.

5 and 6 Billiter Avenue, E. C., - London, England.



Insurance

BROWN & CO., - - - 202 Main Street, Buffalo, N. Y.
PARKER & MILLEN, 15 Atwater Street, W., Detroit, Mich.
J. G. KEITH & CO., - 138 Rialto Building, Chicago, Ill.
LA SALLE & CO., Board of Trade Building, Duluth, Minn.

Are prepared to make rates on all classes of Marine Insurance on the Great Lakes, both CARGOES AND HULLS.

The Salvage Association of North America.

INCORPORATED 1899.



AN ASSOCIATION FOR THE PROTECTION OF UNDERWRITERS' INTERESTS AS REGARDS WRECKED AND DAMAGED PROPERTY AT SEA.

Application for the services of surveyors of this Association may be made to either the Chicago or New York offices.

Chicago Office,
ROYAL INSURANCE BLDG.

New York Office,
MUTUAL LIFE INS. CO. BLDG.

Prominent Fueling Firms==Docks and Lighters.



Steamboat Fuel at Chicago.

YOUGHIOGHENY and
LEHIGH COAL CO.

J. T. CONNERY, Manager. ARCHIE J. HITCHCOCK, Dock Supt.
MAIN OFFICE: 1238-1242 Chicago Stock Exchange Building.
Long Distance Telephone, Main 5049. 110 LA SALLE STREET.

FUEL DOCKS: No. 1, Michigan Slip and Basin. 'Phone 3046, Main.
No. 2, N. Halstead St. Bridge. 'Phone 773, North.
FUEL LIGHTER: Equipped with 125 2-ton Buckets for
Fueling anywhere in Harbor

WE PRODUCE OUR YOUGHIOGHENY COAL, AND GUARANTEE QUALITY.



Steamboat Fuel at Cleveland.

THE PITTSBURGH &
CHICAGO GAS COAL CO.

J. A. DONALDSON, Manager. N. J. BOYLAN, Fuel Manager.
OFFICE: 420-421 PERRY-PAYNE BUILDING.
TELEPHONE, MAIN 1888.

FUEL DOCKS: No. 1, River Bed, through Valley R. R. Bridge. } Telephone,
No. 2, Main River, Foot of West River Street. } West 190.
FUEL LIGHTER: 300 Tons Capacity; Fuel Anywhere in the Harbor.

PICKANDS, MATHER & CO.

PIG IRON.
IRON ORE AND COAL.

FUEL LIGHTERS

AT BUFFALO, ASHTABULA, AND CLEVELAND.
At DETOUR, MICH., A FUEL DOCK equipped with
Shute capacity of 600 Tons.
Best Quality PITTSBURGH COAL furnished at any
time during Day or Night.

WESTERN RESERVE BUILDING, CLEVELAND, O.

THE W. L. SCOTT COMPANY,

ERIE, PA.

WHOLESALE DEALER IN

Shamokin-Wilkes Barre ANTHRACITE.

Youghiogheny, Mansfield, PITTSBURG.

Vessel Fueling a Specialty

by steam lighter or car dump,
at all hours. Electric light.

...Coals

MAIN OFFICE: SCOTT BLOCK. LONG DISTANCE 'PHONE 440.

FUELING OFFICE: CANAL DOCK. LONG DISTANCE 'PHONE 320.

M. A. HANNA & CO.

COAL, IRON ORE AND PIG IRON.

Steamboat Fuel at Ashtabula.

Large Supplies of Best Quality.

Fuel scow with elevators and discharging
spouts. Storage of 650 tons. Discharges
150 tons an hour into steamers while
unloading cargo.

LIGHTER

carrying different grades
at all times.

MINERS AND SHIPPERS,

MAIN OFFICE, Perry-Payne Bldg., Cleveland, O.

Youghiogheny River Coal Co.

MINER AND SHIPPER OF

OCEAN MINE COAL.

YOUGHIOGHENY
GAS AND STEAM

General Office:
Erie, Pa. Long Distance 'Phone 409.

Shipping Decks:
Ashtabula, O. Long Distance 'Phone 76.

VESSELS FUELED AT ALL HOURS

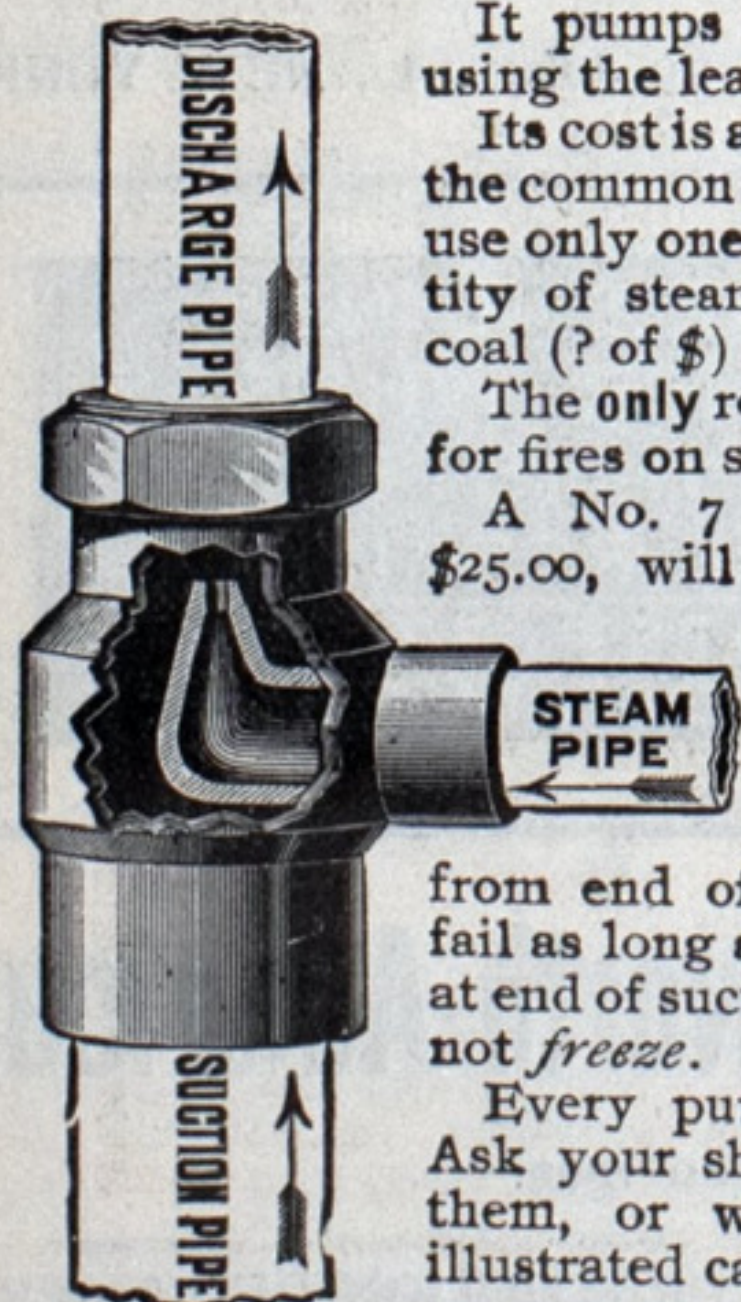
ELECTRIC LIGHT.

WITH OCEAN COAL ONLY,
BY STEAM LIGHTER OR CAR DUMP.

Use the Vanduzen
Steam Jet...

PUMP

THE BEST STEAM JET PUMP IN THE WORLD.



It pumps the most water
using the least steam.
Its cost is a little more than
the common syphon, but will
use only one-third the quan-
tity of steam; and it takes
coal (2 of \$) to make steam.
The only reliable Jet Pump
for fires on steam vessels.
A No. 7 Pump, costing
\$25.00, will force water
through 50 feet
of hose and
throw a 3/4-inch
solid stream of
water 75 feet
from end of nozzle without
fail as long as there is water
at end of suction pipe. It will
not freeze. Has no valves.
Every pump guaranteed.
Ask your ship chandler for
them, or write to us for
illustrated catalogue.

THE E. W. VANDUZEN CO., CINCINNATI, O.

PATENTS

Procured on Inventions
and Designs. Labels,
Prints and Trade Marks
Registered.

Sixteen Years' Experience.

R. W. BISHOP, - Washington, D. C.

The Cuddy-Mullen Coal Co.

Miners and
Shippers of

STEAM COAL

FUELING DEPARTMENT
FACILITIES. * * * * *

CLEVELAND HARBOR.—Car Dumper; Eight Pockets, 1000 Tons Capacity; Lighter
Steam Derricks.

DETROIT RIVER BRANCH.—Amherstburg; Four Pockets; Three Steam Derricks
SANDWICH—Fourteen Pockets and Two Steam Derricks.

"SOO" RIVER BRANCH.—Two Docks, (Formerly known as the Anthony and Watson
Docks,) Equipped with Pockets and Steam Derricks.

GOOD
COAL.

COURTEOUS
ATTENTION

QUICK
DISPATCH.

General Offices, Perry-Payne Bldg., Cleveland, O.

DONNELLY CONTRACTING CO.

896 ELLICOTT SQUARE,

BUFFALO, N. Y.

CONTRACTORS AND CONSULTING ENGINEERS,
HARBOR AND CANAL WORKS, ETC.



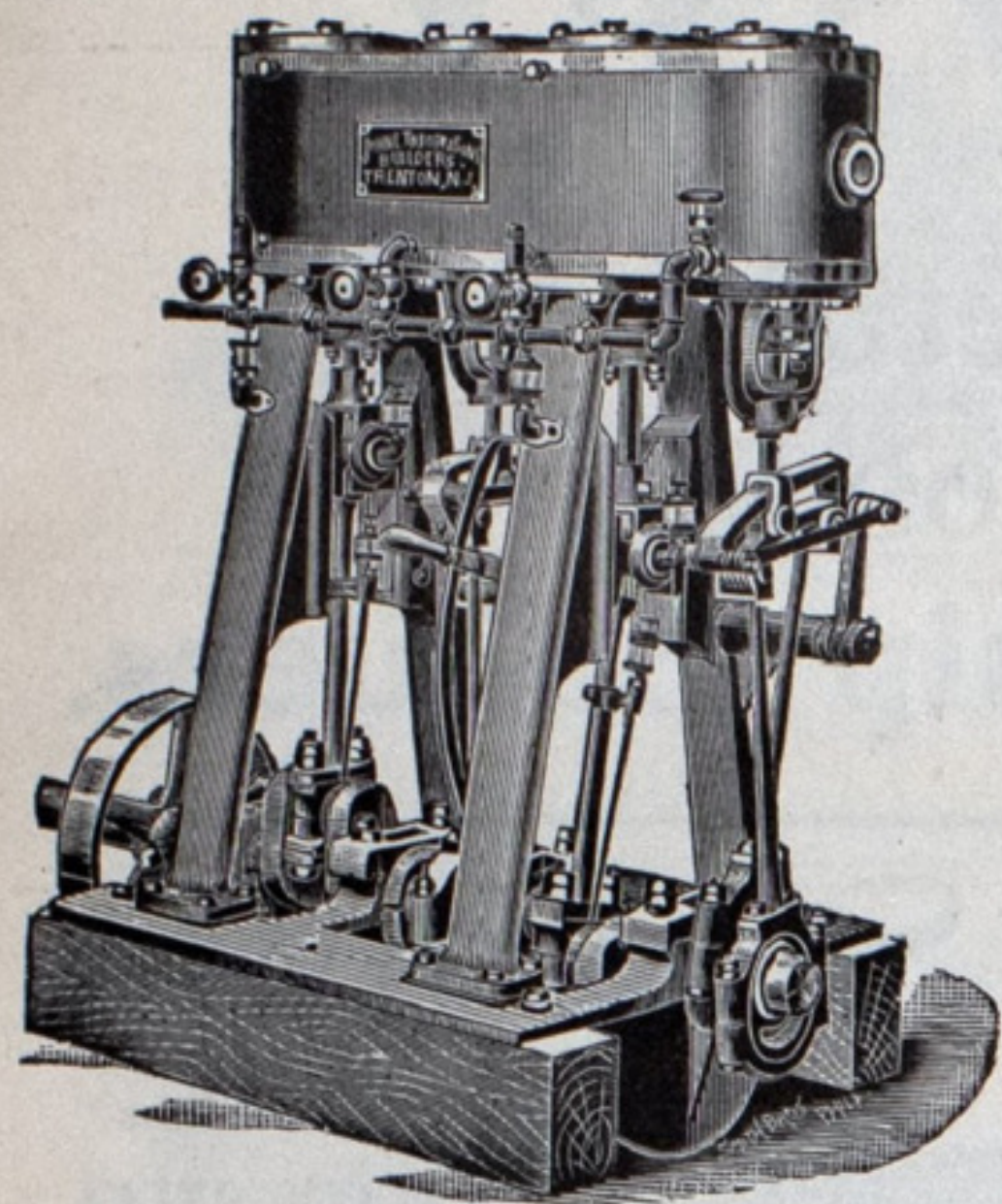
No. 8
Beck Patent
Steam and
Hand Steering
Gear.

BUILT BY
Pawling & Harnischfeger,
Milwaukee, Wis.

Simplest,
Strongest
and most
Reliable.
Changed
from Steam
to Hand or
back by one
lever in less
than one
Second.

U. S. Hydrographic Office Charts, Books of
Sailing Directions, Etc., are for sale at the office
of The Marine Record, Western Reserve
Building, Cleveland.

John E. Thropp & Sons' Co.



BUILDERS OF

Compound and Triple Expansion

ENGINES,

Boilers, Surface Condensers, Propeller
Wheels, Etc.Contracts taken for yachts and tugs
complete. Send for photographs of En-
gines and descriptive pamphlet.

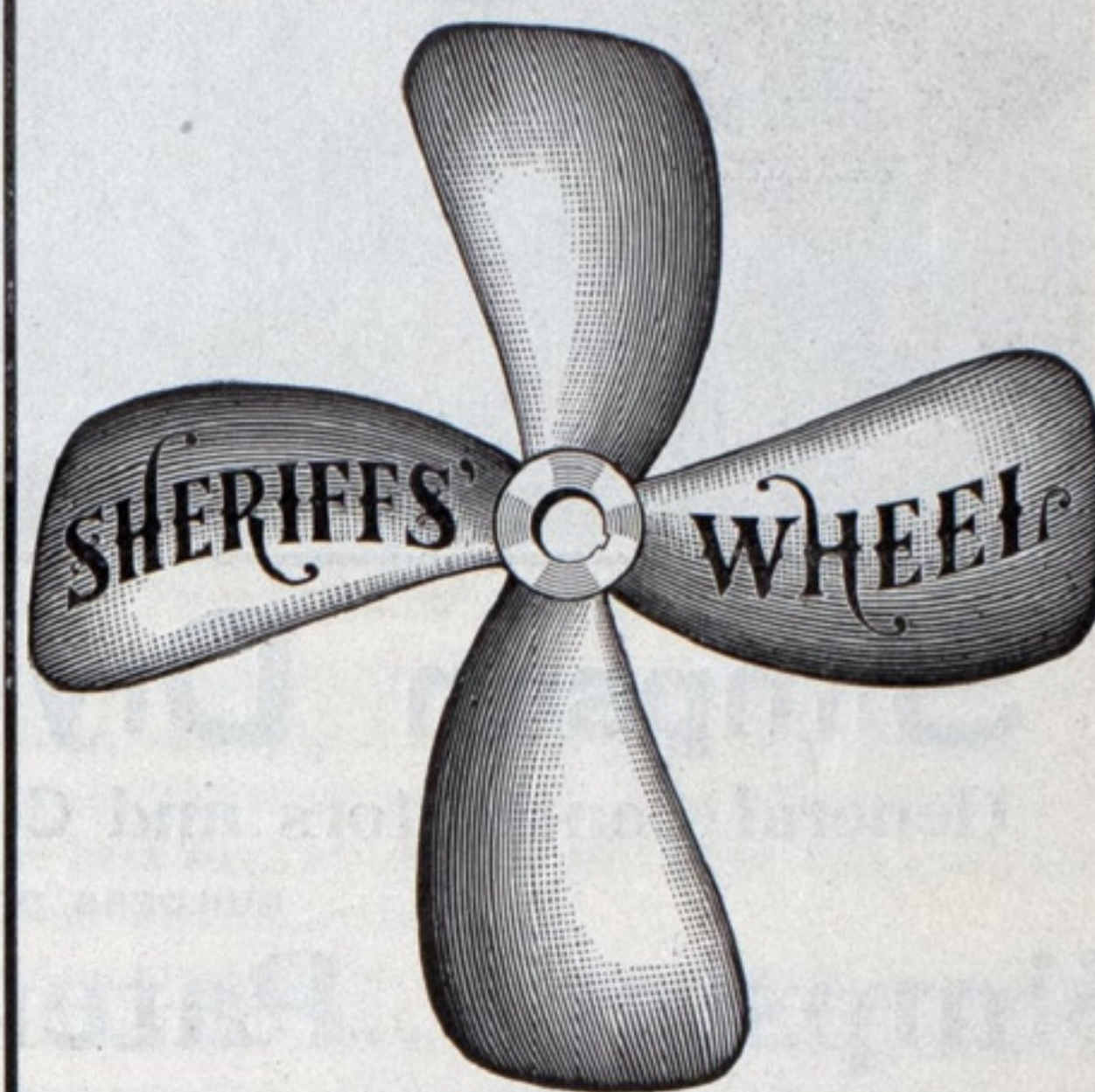
Works on Delaware & Raritan Canal Basin.

TRENTON, N. J.



SHERIFFS MFG. CO.

ESTABLISHED 1854.



MILWAUKEE, WIS.

THE KENNEY FLUSHOMETER

FOR FLUSHING WATER CLOSETS.

No Cup Leathers or Springs.

THE BEST SYSTEM EVER INVENTED FOR USE ON
STEAM VESSELS.Owners and constructors of Steamships, Yachts and
Steamboats have found it indispensable. Used by
the U. S. War and Navy Departments. Transports
Grant, Sheridan, Burnside, Terry, Hooker, Thomas,
Sedgewick, Meade, McClellan, Sherman, Crook.
Also Albany Day Line Steamers and others.

THE KENNEY FLUSHOMETER

Is Patented and Manufactured only by

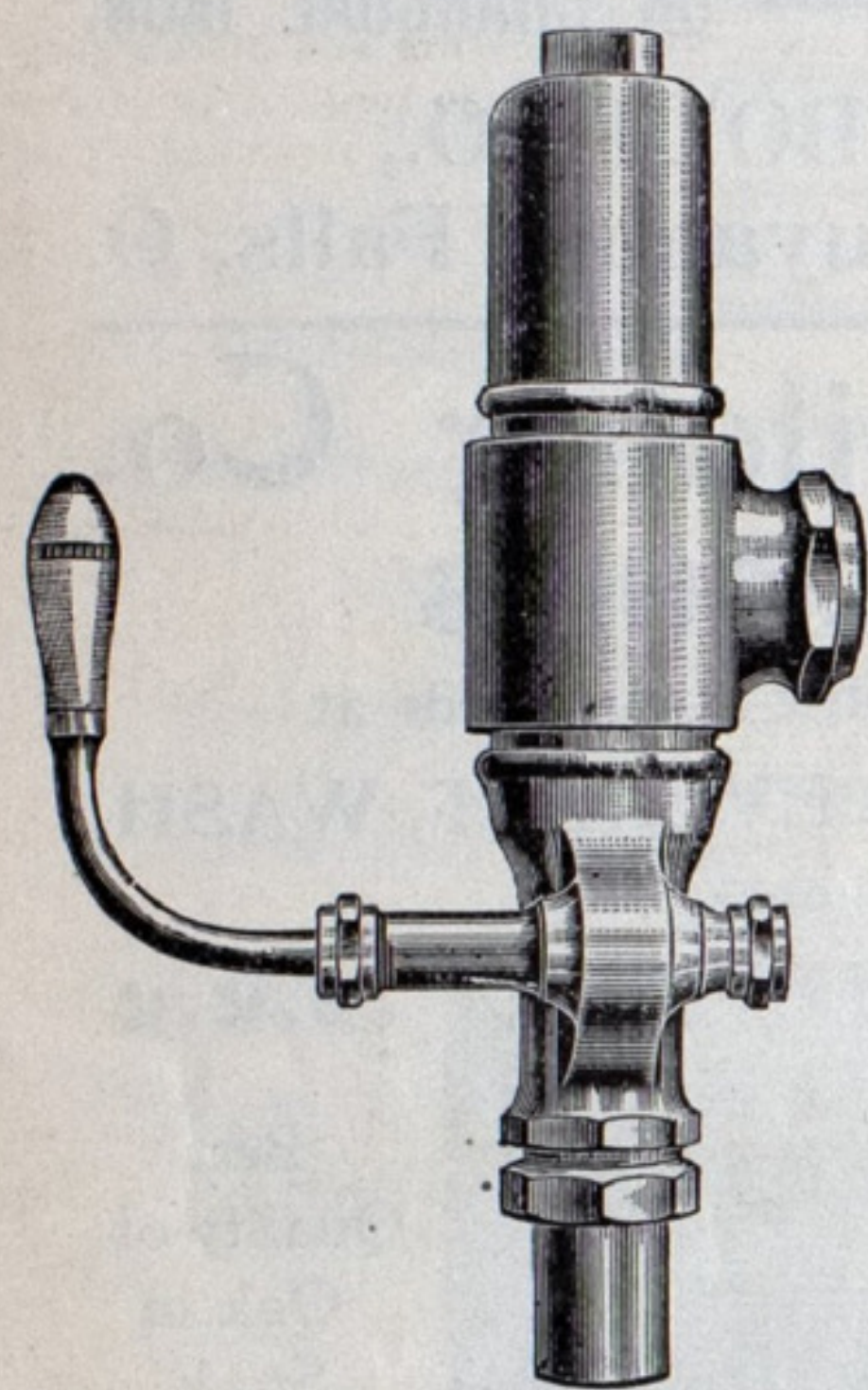
THE KENNEY CO.,

Who guarantee the successful operation of the system.

Send for illustrated pamphlet,

THE KENNEY COMPANY,

72-74 Trinity Place, NEW YORK.



THE CHASE MACHINE COMPANY, ENGINEERS AND MACHINISTS.

MANUFACTURERS, UNDER THE CHASE PATENTS, OF

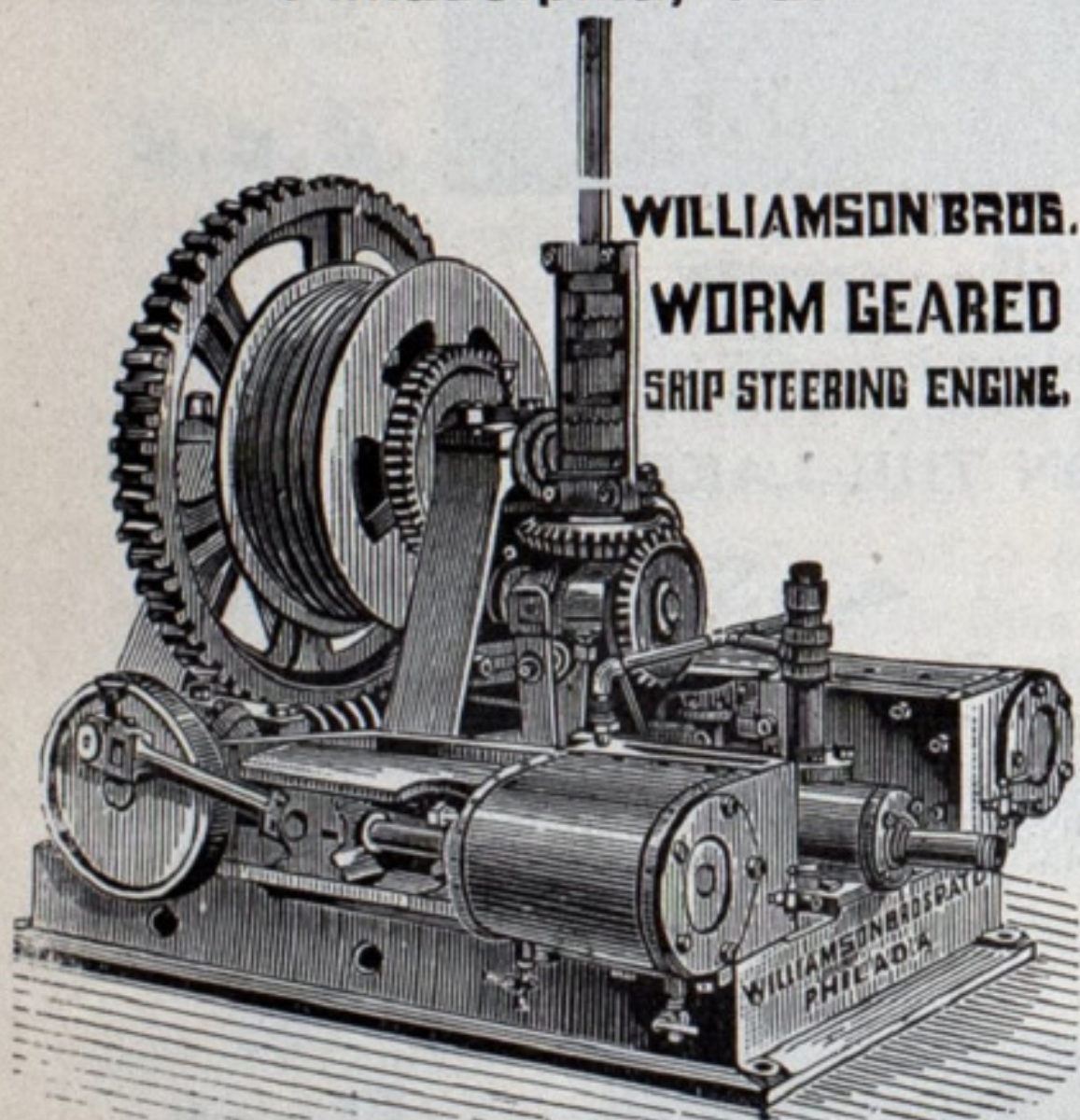
Fog Whistle Machines, Hoisting Engines, Steering Engines, Automatic Towing Engines,
Power and Drop Hammers, and other Machinery. Engineers' Supplies and General Jobbing.

111 ELM STREET.

TELEPHONE, MAIN 994.

CLEVELAND, O.

WILLIAMSON BROS.

COR. RICHMOND AND YORK STS.,
Philadelphia, Pa.WILLIAMSON BROS.
WORM GEARED
SHIP STEERING ENGINE.HOISTING and SHIP ENGINES
STEERING ENGINES.With either Fractional, Spur or Worm Gear of
Various Patterns to Suit all Purposes.

Compasses Adjusted

For deviation, and deviation
tables supplied. Great facilities
for doing the work by day or
night.

John Maurice.

Office, 24-26 Market St., CHICAGO.
Residence, 1155 South Sacramento Avenue.

Scott's Coast Pilot for the Lakes.

Price, \$1.50.

For Sale by

THE MARINE RECORD,
Western Reserve Building, Cleveland.JOHN DONNELLY, SR., PRES.
JOHN DONNELLY, JR., VICE PRES.

THE DONNELLY SALVAGE AND WRECKING CO., Ltd.

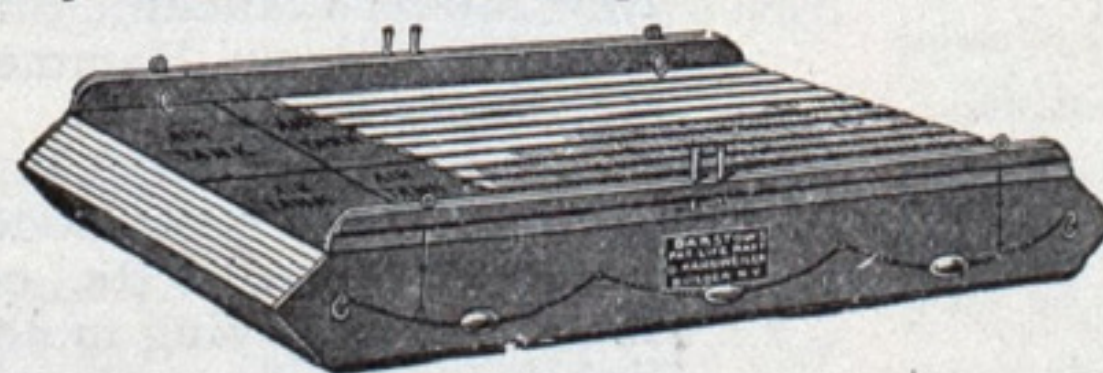
KINGSTON, ONT.

EXPERIENCED DIVERS, TUGS, STEAM PUMPS, ETC.,
SUPPLIED ON SHORTEST NOTICE.

NEVERSINK CORK JACKET AND LIFE BELT.

Warranted 24 lb. Buoyancy and full Weight of Cork, as required by U. S. Inspectors. Consolidated Cork
Life Preservers. Superior to all others. Rings Buoys and Fenders. SAFEST CHEAPEST.
Approved and adopted by U. S. Board of Supervising Inspectors.
Also adopted by the principal Ocean, Lake and River Steamer Lines as
the only Reliable Life Preserver. Vessels and trade supplied. Send for
Catalogue.

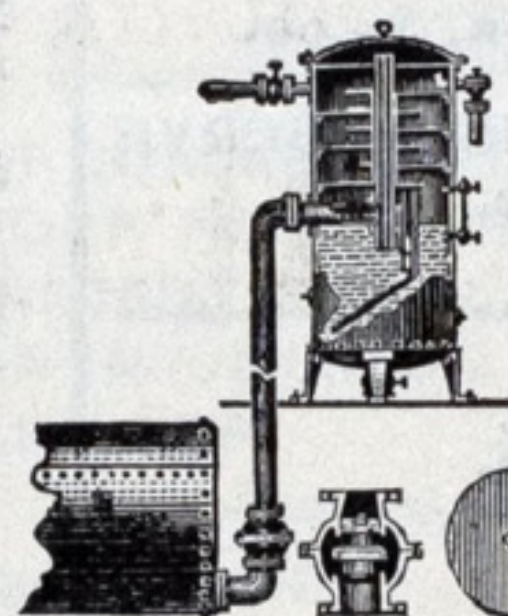
Awarded four medals by World's Columbian Exposition.

METALLIC
and
WOODEN
LIFE
BOATS.

Metallic Life Rafts, Marine Drags.

Manufacturer of Woolsey's Patent Life Buoy, which is the lightest,
cheapest and most compact Life Raft known. Send for illustrated cata-
logue. Get our prices before buying elsewhere.

D. KAHNWEILER'S SONS, 437 Pearl St., New York City.



Buffalo Feed Water Heater AND PURIFIER.

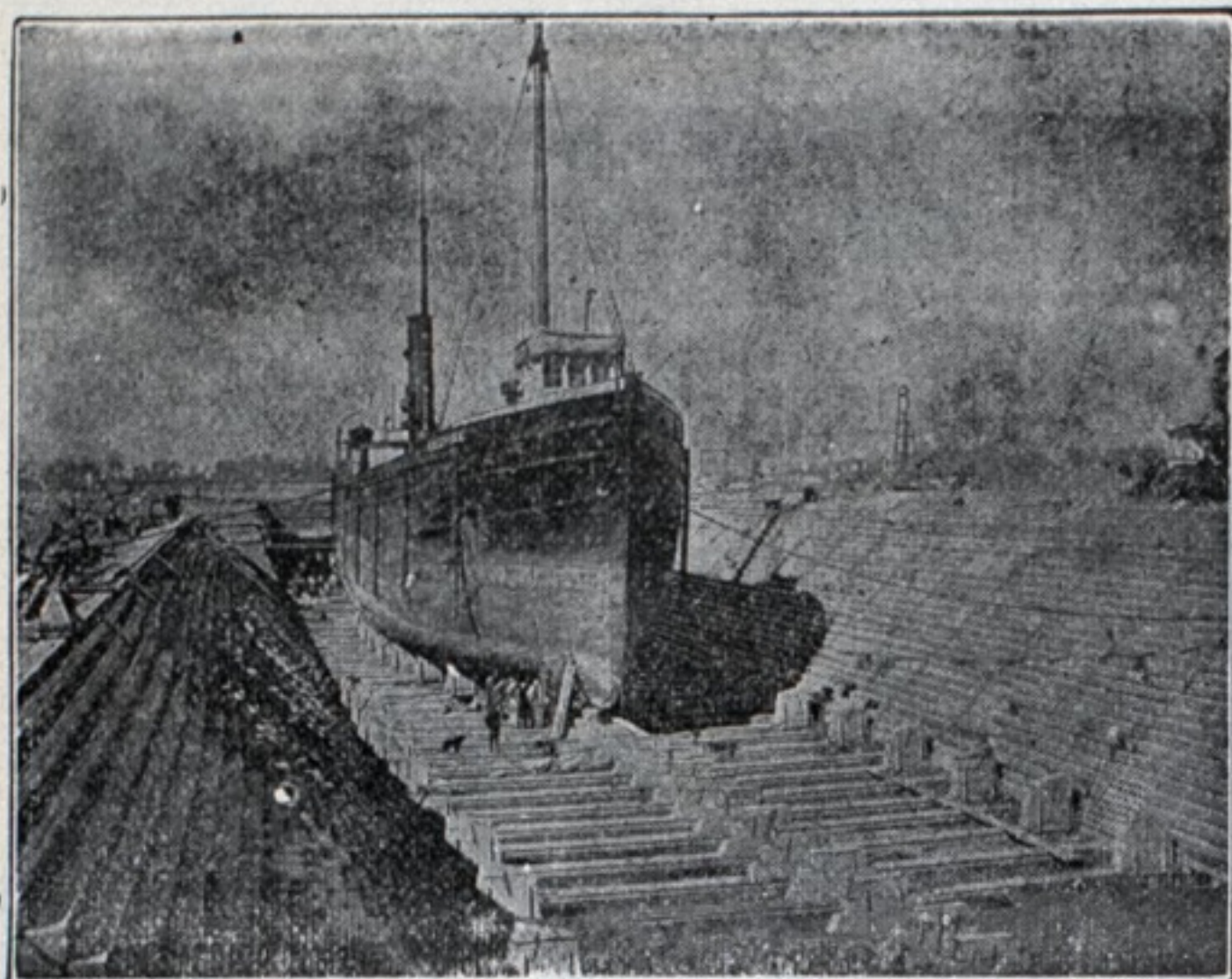
Made in all Sizes and to Suit all Conditions.

ROBERT LEARMONTH,

200 Bouck Ave., BUFFALO, N. Y.

Send for Catalogue.

For Stationary, Portable,
Traction Engines, Tugboats, &c.
Thoroughly Reliable—Perfectly Automatic.
JENKINS BROS., - Selling Agents.
NEW YORK, BOSTON, PHILA., CHICAGO.



Craig Ship Building Co.

TOLEDO, OHIO.

New Dry-Dock 450 feet long, 110 feet wide on top, 55 feet wide on bottom, 16 feet water on sill.

Repairs to Metal and Wooden Ships a Specialty.

**Metal
and Wooden
Ship Builders.**



Simpson Dry-Dock Co.

General Contractors and Consulting Engineers,

BUILDERS OF

Simpson's Patent Dry-Dock,

35 BROADWAY, NEW YORK.

THE BEST BOOK OF AMERICAN LAKE SHIPPING.

BEESON'S MARINE DIRECTORY FOR 1899.

A cloth bound, gilt embossed volume of 260 pages, containing alphabetically arranged lists of all American steam and sail vessels on the Northwestern lakes, giving tonnage, length, breadth and depth of each, place and year of build, and name and address of managing owner. These lists are the originals published annually and are not taken from other publications. Their correctness is all that can be possibly obtained in a technical work. Many miscellaneous features are comprehended in its contents. Among them a list of American lake ports, with description of each, numbering over two hundred.

Mailed to any address, postage prepaid, on receipt of subscription, \$5.00.

The Marine Record, THIRD FLOOR, WESTERN RESERVE BUILDING, CLEVELAND, O.

LIFE BOATS.

YAWLS.

LIFE RAFTS.

DETROIT BOAT WORKS

DETROIT, MICH.

STEEL, IRON AND WOODEN TUGS.

STEAM AND SAIL YACHTS.

ALL KINDS OF PLEASURE BOATS, FISHING AND HUNTING BOATS, SHELLS, BARGES, GIGS AND CANOES.

Safety Hollow Staybolts

Guaranteed to meet Government Specifications and Inspection.



MANUFACTURED FROM

BEST QUALITY STEEL OR CHARCOAL IRON.

FALLS HOLLOW STAYBOLT CO.,

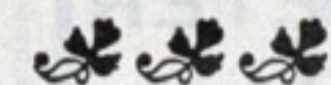
Cuyahoga Falls, O.

Write for Samples and Prices.

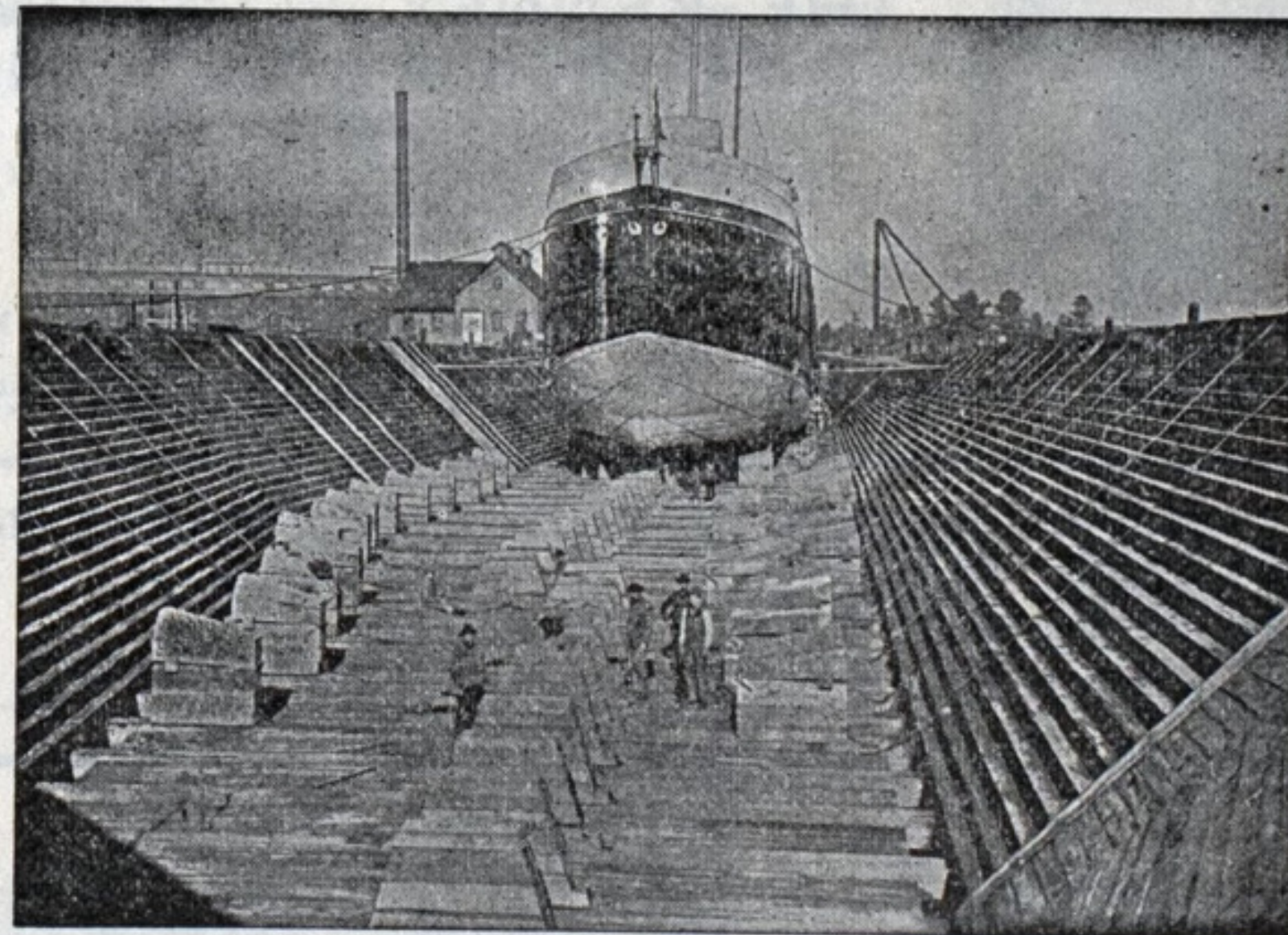
Superior Ship Building Co. STEEL AND METAL SHIPS

Of all Classes built on shortest possible notice at our yards at WEST SUPERIOR, WIS., and also at EVERETT, WASH.

PHOTOGRAPH OF 300-FOOT BOAT IN DOCK.



Plates and Material always on hand to repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak in Stock for Repairing Wooden Vessels of all Classes.



SIZE OF DOCK

Length, Extreme.....	587 feet.	Entrance, Top.....	55 feet 9 in.
Breadth, Top.....	90 " 4 in.	Entrance, Bottom.....	50 "
Breadth, Bottom.....	52 "	Depth over Sills.....	18 "

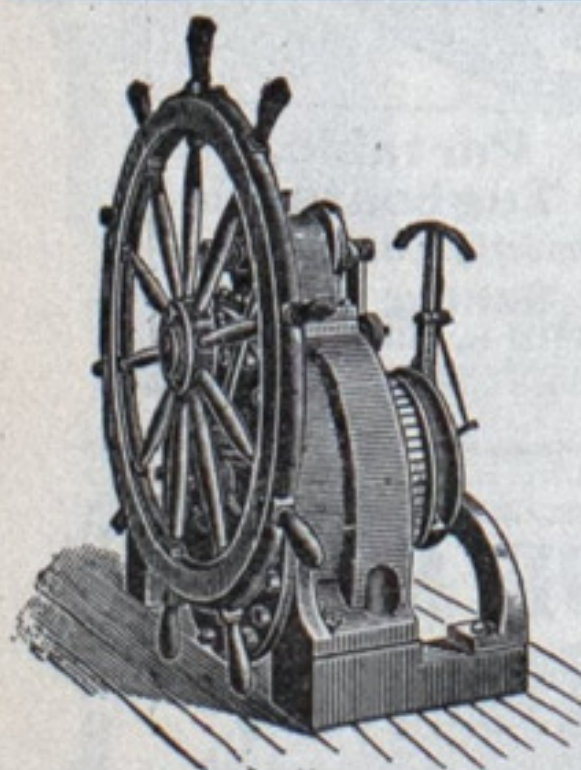
LARGEST DRY-DOCK ON THE LAKES.

Prices for Repairs and Docking same as at Lower Lake Ports.

SUPERIOR, WIS.

A Number of Propeller Wheels in Stock at Dry-Dock.

Queen City Patent Hydraulic Steerer.



The best and most reliable.

Generates no heat in pilot house.

Has large hand wheel.

Can be changed from power to hand steering instantly.

A favorite with pilots.

Send for References.

Queen City Engineering Co.

BUFFALO, N. Y.

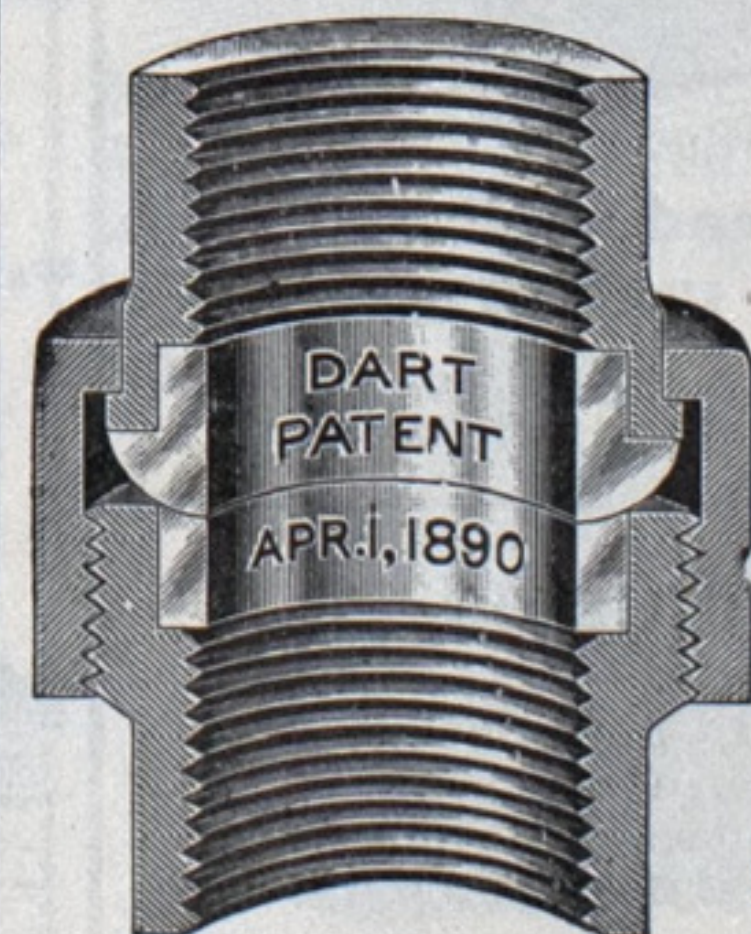
MARINE REPAIRING

AT MANITOWOC, WIS.

The Goodrich Transportation Co. are prepared to do all kinds of Repair Work to Machinery. Also Joiner Work.

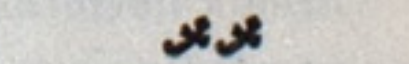
Goodrich Transportation Company's Repair Shops include complete Carpenter and Joiner Shop. New Modern Machine Shop. Blacksmith Shop, including Steam Hammer, Punch and Shears, etc., Brass Foundry.

Repair Shops are adjacent to Dry Dock and are equipped with best Modern Machinery. Portable Electric Drills, etc., complete Electric Power Plant for supplying motors on board ships, and lighting. Night work a specialty. All work in charge of experienced and skilled mechanics. Charges moderate. Twenty-one feet of water alongside of shops.



The Best Union

Made in the U. S.



Mn'd by the

E. M. Dart Mfg. Co.

Providence, R. I.

Send for circulars and prices.

